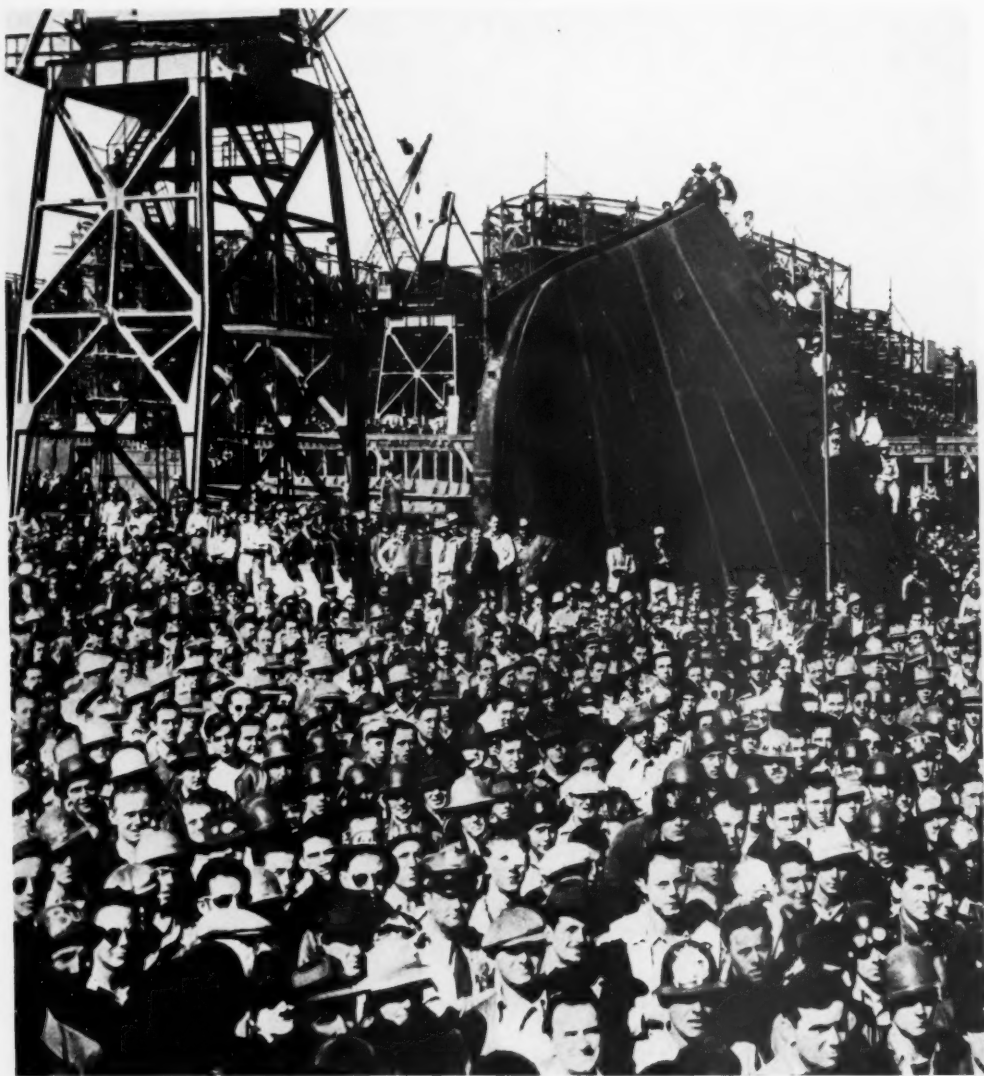


WESTERN INDUSTRY

VOLUME VII NO. 5



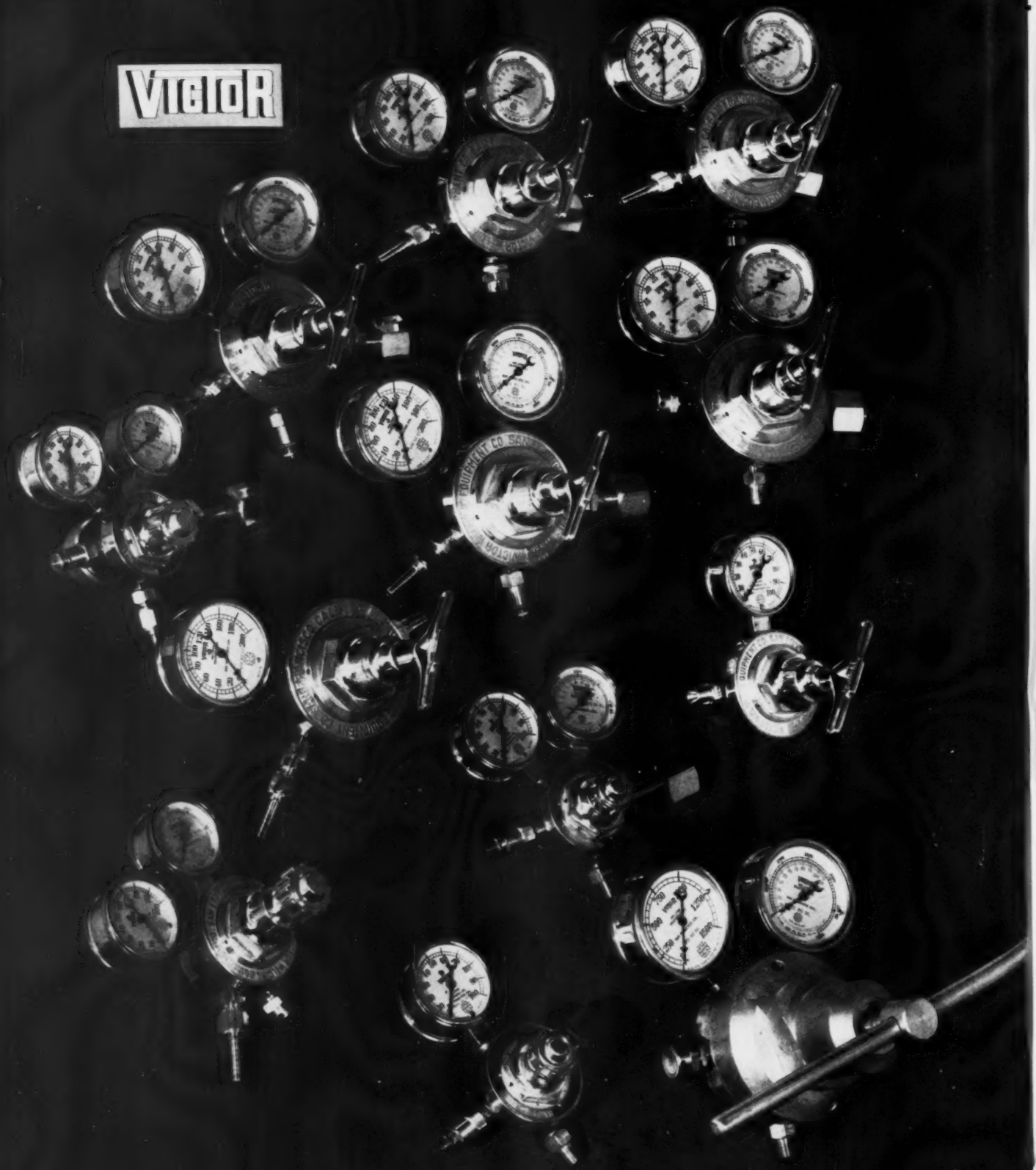
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WESTERN INDUSTRY

The Journal of Western Development

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Labor & Management . . .

The Pacific coast area is going along with the task of organization of joint labor-management committees. Many of the larger industrial units including the aircraft plants have announced that plant committees are operating. An early survey indicates that so far the organization is proceeding smoothly under the War Production Drive plan, and no friction has developed. See page 7. Lack of available material forces industry to seek substitutes. At San Francisco, the Defense Contract Service has extended its activities and furnishes leads for "alternate material." See page 8.

WPB . . .

Our Washington editor looks in on the War Production Board and cites some enlightening instances obtained by personal contact and by some businessmen who have gone to Washington. He is impressed with the rugged ideas of such men as Admiral Emory S. Land, chief of the United States Maritime Board and with General George C. Marshall, USA Chief of Staff. See pg. 9.

Jap Removal . . .

Nobody disagrees with the removal of the Japanese from strategic coastal areas but their mass evacuation has posed some interesting industrial problems. They surely had accomplished a fine job of digging in on our Pacific coast as we are finding out. See page 12.

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Plywood comes into its own. It was well on its way to bigger and better things long before the war started but lack of steel and plywood's demonstrated ability for new uses is amazing. Major defense housing activities at San Diego and Vallejo, Calif., utilize plywood for building. Construction jobs use large amounts. See pg. 14.

Agriculture in China . . .

The outlook is not too encouraging due to lack of coordination, according to Dr. Fong, expert in Chinese affairs. An industrial labor supply is lacking, he says. See page 18.

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Member Controlled Circulation Audit

25c PER COPY

\$2.00 PER YEAR

Published by King Publications

503 Market Street San Francisco, Calif.
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LOUIS F. HOLTZMAN

Editor

ARNOLD KRUCKMAN

Washington D.C. Editor

What Do We Have?

IN THESE days of huge appropriations and effort toward conversion of industry to all-out war program, it is difficult to keep pace with developments. Let us see what we have here in the West! Outstanding is the fact that the nation has turned to the West for a huge proportion of the sinews of war,—utilizing natural resources, favorable geographic conditions for fighting the war of the Pacific and our ability to produce. California holds contracts for war work exceeding the volume of any other state in the union.

Outstanding also is the fact that according to Admiral Emory S. Land, head of the United States Maritime Commission, western shipyards relatively are producing ships at a rate $1\frac{1}{2}$ to 3 times the output of older eastern shipyards. Seattle, Portland, San Francisco and Los Angeles are all major shipbuilding centers. Los Angeles which had produced no ships for two decades now employs 52,000 men in shipbuilding. Projected for Portland is a shipbuilding program which may increase the present 30,000 shipyard workers to 100,000.

Pacific coast aircraft plants produce upwards of 50 per cent of all the airplanes of the country. In the not distant future, aluminum producing and fabricating plants will rise in the northwest utilizing abundant water power resources. Magnesium, the comparatively new metal will be produced in volume here. We already have one plant in operation at Permanente, Calif. near San Jose. A new light metals industry soon will be available here for war production and can be adapted for peacetime production.

Huge Steel Expansion

LET US examine what is taking place within the steel industry. Hitherto, ship plates produced, for instance, at Pittsburgh, Pa., had to be shipped to the eastern seaboard say at Baltimore, and then transshipped by water through the Panama Canal to Pacific coast shipbuilding centers. Now we have two entirely new steel operations under construction in the West. These will utilize coke-making coal and iron ore of which it appears now there are plentiful supplies. At Provo, Utah already under construction is a new huge plant financed by the government to cost \$126,000,000. This will be a fully integrated unit—coke-making plants to blast furnaces and including a plate mill. Utah coal and iron ore found in quantity nearby will be utilized.

In southern California at a site "somewhere near San Bernardino" is being erected another fully integrated steel plant, financed by the government and to cost slightly less than \$50,000,000. Here coke-making coal will be used from Utah and iron ore will be taken from the plant's backdoor in the San Bernardino mountains.

These are but a few of the highlights of the West's contribution to the war. The former preponderant agricultural characteristics are being retained but on top of them is being imposed a great industrial plant. These new plant facilities can be utilized as the start of a new industrial era for the West after the war is over.

Speed-up Needed

ON MARCH 2, WPB head Donald M. Nelson outlined by letter to some 2,000 prime contractors the government plans for the War Production Drive. This drive designed to speed up production in the plants of prime and sub-contractors has been under way for two months but industry is not organizing to meet plant requirements as fast as some have expected. There is no lack of cooperation on the part of plant executives. The impact of the production drive came suddenly. Drastic revision of plant operation with respect to labor relations is part of the plan which may provide some measure of excuse for those plants which have been tardy. Every plant executive should become entirely familiar with the War Production Drive plan details of which are available at the many WPB offices in all large cities or centers of productive effort.

Many of the larger plants on the Pacific coast such as Columbia Steel, Boeing Aircraft, Douglas Aircraft, Los Angeles Shipbuilding & Drydock Co. and a host of others already have put into effect the methods for the production drive and notified WPB that joint management-labor committees are already operating. This procedure applies with equal force to the smaller plants doing sub-contracting work. Many have already organized. Others have been slow but all are urged to get into action at once. The suddenness of the move precluded immediate government administrative machinery but it is rapidly being built up. Government representatives will visit each and every plant doing war work to see that the plan is put into effect and operating properly.

Silver

ARRANGEMENTS have been made to use 40,000 tons of silver,—about half of the Treasury department's uncoined silver supply in place of metals now more precious to the Nation's war effort. This is serious business and not a joke as had been suggested in this relation some months ago. The plan as revealed so far is to have the Treasury department "lend" the white metal to the Defense Plant Corp. which in turn will utilize the silver in connection with its many and growing war plant facilities. It is expected that it will be fabricated into busbars in electrical equipment. It will be used in other forms in the production of heavy electrical equipment. The copper situation despite a huge increase of output is still critical. Hence, the use of silver.

Since the western states are by far the largest American producers of silver, it should be good news to them that the white metal is growing rapidly in industrial importance. At present silver is one of the few metals not entirely restricted to war applications. It is now being employed in place of aluminum, nickel, copper, brass, chromium, tin, stainless steel and other metals. Applications of silver often involves alloys with other metals. The chief industrial application of silver so far is in the form of silver brazing alloys, often referred to as "silver solders."



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Sure—our shops are busy—our capacity greatly increased. We are out to help win the war. Nevertheless, Western Forgings continue to fulfill their vital obligations to manufacturing industries of the Pacific Coast. We'll help you with today's problem or with tomorrow's and give service in keeping with our obligation to Uncle Sam.

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LABOR - MANAGEMENT

Joint Plant Production Committees Are Now Being Organized in Plants Holding Prime and Sub-contracts—Early Survey Indicates They Are Functioning Without Friction—Speed-up Is Urgent Need

PRIME contractors with plants in the major production centers for war work in the Pacific coast industrial sector, last month were well along with the task of organization of joint labor-management War Production committees. This was in response to the instructions of Donald M. Nelson, WPB head, in March addressed to some 2,000 nationwide holders of prime contracts that such committees should be organized to speed war work. In union-labor controlled plants, organization of these committees is mandatory with labor to have equal representation with management.

While the March instructions were addressed to holders of prime contracts, it was declared that these labor-management committees should also be organized in plants holding sub-contracts for war work. Considerable progress along this line was reported in the chief industrial centers such as Seattle, Portland, San Francisco, Los Angeles and other larger communities.

While at the start there was considerable skepticism at the drastic provisions of the move of WPB giving labor in union plants an equal voice with management in these committees, a survey by *Western Industry* among representative plants indicates that this was not retarding formation of these committees. It was something that had to be done regardless of personal views; besides the need for increasing war output justified using any means. Apparently, the ranks were closed with a solid front presented. Evidence of any squabbling between labor and management in the function of these committees so far is lacking.

In operation, these committees study such subjects as proper care of tools, preventing breakdowns, reducing accidents, adapting old machines to new uses, cutting wastage, breaking production bottlenecks and using every machine to the fullest extent.

Committee Organization

While there has been no lack of cooperation on industry's part with the government War Production Drive which started in March, the organization of management committees within the various plants has not proceeded as fast as had been anticipated by the government. In mid-April, the number of those firms which notified Donald M. Nelson, WPB head that the drive had started and voluntary labor-management committees had been organized, passed the 500 mark and was approaching 1,000 at the month-end.

Douglas Aircraft Co. reported in mid-

April that committees had been organized for its two huge plants—those at Long Beach and Santa Monica, Calif. Other western plants which reported that the labor-management committees had been organized were: California—Boyle Manufacturing Co., Los Angeles; Byron, Jackson Co., Los Angeles; California Shipbuilding Corp., Terminal Island; Columbia Steel Co., Torrance; I. E. du Pont de Nemours Co., Los Angeles; Goodyear Tire & Rubber Co., Los Angeles; Northrop Aircraft Co., Hawthorne; Pacific Bridge Co., Alameda; Permanente Metals Corp., Oakland; Westinghouse Electric & Manufacturing Co., Los Angeles; Los Angeles Shipbuilding & Dry Dock Co., San Pedro; Stephens Brothers, Stockton; and Ryan Aeronautical Co. and Solar Aircraft Co. of San Diego.

Oregon—Electric Steel Foundry Co. Utah—Columbia Steel, Provo and Columbia; Columbia Iron Mining Co., Cedar City. Washington—Associated Shipbuilders, Seattle; Pacific Car & Foundry Co.,

Renton; Northwest Lead Co., Seattle; and Boeing Airplane Co., Seattle.

While the original March instructions to 2,000 prime contractors to organize labor-management committees was to say the least somewhat abrupt without any great explanation, some elaboration was given last month by Donald M. Nelson, WPB head who said:

"This drive is designed to increase the production of weapons now and not to further the interests of any special group. It is not a plan to promote company unions. It is not a device to tear down the power or position of any union. It does not interfere with bargaining machinery where it exists. It is not designed to conform to any plan that contemplates a measure of control of management by labor."

"It does not put management in labor or labor in management. It is not a management plan, or any other plan. It is the War Production Drive plan. It is a perfectly simple, straight-forward effort to increase production.

"The plan calls for greater efficiency through cooperation. That means if anyone has a suggestion as to how we can do our job faster and smoother, that suggestion must be passed along to where it will do the most good—the most good for our country and for free men and women everywhere."

• Seattle is the jumping off place for Alaska and materials are flowing through this port destined for northern points. Cold weather clothing is bought in quantity. Samples of the type of materials needed are exhibited at Defense Contract clinics at San Francisco and Los Angeles available to all.



SUBSTITUTE MATERIAL

Lack of Available Material for Civilian Consumption Goods Forces Industry to Seek "Alternates"—San Francisco Clinic of Defense Contract Unit Sets Up New Manufacturers' Service—Furnishes Ideas

"WOODEN" cloth, 50 per cent redwood bark fiber, 50 per cent reclaimed wool—a dog house of rolled masonite, redwood drainpipes, papier mache flower pots and an excellent window screen made from plastic materials—all these and many more are included in the large number of articles which are being manufactured using available substitute materials where the usual basic article cannot be had.

Actually one manufacturer is already producing jackets utilizing half redwood bark fiber and reclaimed wool and in "feel" and appearance they are apparently suitable for rough outdoor wear. Flax "tow" is a fiber obtained from the stem of the flax plant grown for seed and apparently can be used for upholstery stuffing and many other kindred uses. It may produce an inferior type of cordage or twine but not suitable for heavy duty.

A fiber is being obtained from the yucca plant which grows in large quantities in southern California. Cuttings from the stem of the plant are almost pure cellulose.

At San Francisco last month was opened an auxiliary to the WPB sub-contracting

exhibit, the first in this country, which displays a large number of articles manufactured from substitute materials. The exhibit in the Hotel Whitcomb, under the management of R. W. Hawksley is designed to stimulate interest in making essential articles with substitute materials. Manufacturers in this field are also asked to contribute ideas for the benefit of others.

The clinic offers technical help to any small manufacturer who has ideas for possible substitutions for articles that use materials such as rubber, copper, steel, jute, tin or aluminum—all unobtainable for civilian use. Instead are suggested for the small manufacturer the utilization of such materials as wood, concrete, glass, redwood fiber, vegetable oils and other items that are available.

The "alternate materials" display at San Francisco suggests that a man with a wood-working shop should run down the list of items where wood could replace metal. Mail boxes, tool boxes, kitchen sets, roofing and guttering are some of the items which it is suggested could be turned out by a wood-working shop. A man with a sheet metal shop, exhibit manager Hawksley points out, should figure how to use

composition boards for gutters, troughs or ventilators by some modification of technique.

The San Francisco "alternate materials" exhibit has attracted widespread interest and attendance is increasing daily. Manufacturers throughout the area are sending representatives who seek ideas from the exhibit officials who also act as liaison officers putting company officials in one line of business in touch with other concerns. Sometimes by means of a hookup, manufacturers are able to combine facilities and secure a contract to manufacture one certain article needed for war use.

Lumber is still available and considerable stress is laid on the use of this material to replace the ordinary use of iron. Some items which may be manufactured almost entirely of wood are suggested by the San Francisco clinic. These include: buckets and pails; cabinets (kitchen, medicine, radio and sewing machine); clock cases; clothes racks and hangers; picture and mirror frames; furniture; mill work (doors, door and window frames, sash, general trim, knobs, railing and shelving); roofing and guttering; washing machines; waste baskets; refrigerators; conduits and pipes; and truck and automobile bodies.

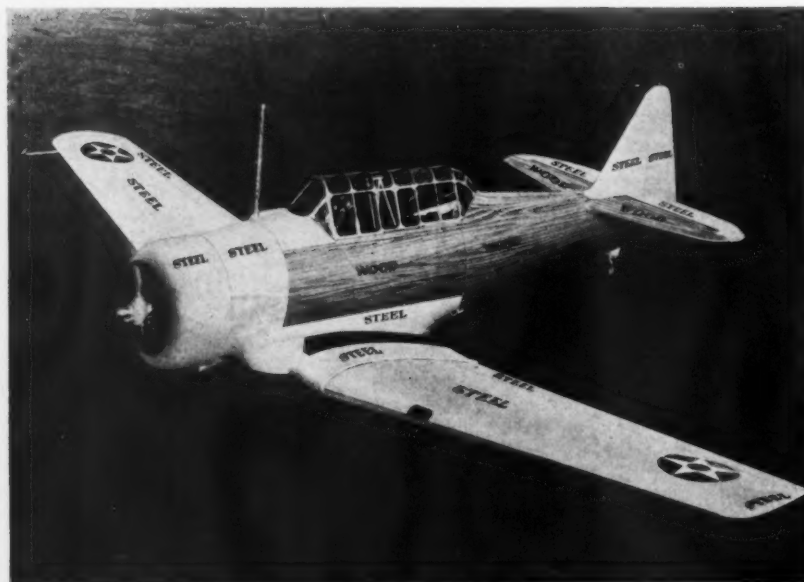
AIRCRAFT

OUT OF an un auspicious beginning in a stove manufacturing plant in southern California has come one of the most revolutionary developments in the aviation field in years, according to claims of engineers of the North American Aviation, Inc. at Inglewood, Calif. The development entails the application, declared successful, of the most common type of low carbon, low alloy steel as a substitute for aluminum in the production of training planes in combination with plywood. Now, North American engineers are thinking of applying the technique of the steel-plywood airplane to the fast-moving combat types. Use of the heavier-than-aluminum steel is made possible through the combination with plywood for certain parts of the fuselage and tail assembly.

North American engineers declare that airplanes utilizing the type of steel found suitable will be of top quality and performance, meeting the stringent requirements that the Army and Navy as well as the British RAF have laid down for advanced training planes.

Although the low carbon, low alloy steel to be utilized in plane manufacture is somewhat similar to the steel used in stoves and railroad coaches, it has been rendered more suitable for aircraft structures by means of cold reduction selected after lengthy research in the laboratory. It will eliminate 75 per cent of the aluminum alloy ordinarily used in the North American trainer.

• This is an actual photograph of a North American Aviation AT-6A trainer in flight, with sections marked off by an artist to illustrate parts built of wood and steel.



WASHINGTON SCENE

The Task of Civilian Cooperation With Our All-out War Effort Is Becoming More Involved, Many Businessmen Find—WPB Policy Has Not Yet Crystallized—Admiral Land Cites Pacific Shipbuilding

By ARNOLD KRUCKMAN
Associate Editor

WASHINGTON, D.C.—We westerners were tickled at a recent press conference with Admiral Emory S. Land, of the U. S. Maritime Commission, when he emphasized in his forceful way that the shipyards of the West Coast were doing a better job than any other shipbuilding plants in the United States. The statement had particular punch because the Admiral in his salty manner made it clear that the westerners knew very little about shipbuilding when they started, but they used that peculiar gift of initiative and enterprise, which is the hallmark of the pioneer Far West, to surmount obstacles that apparently still have many of the oldtimers elsewhere stopped.

The Admiral is a fascinating example of the sailor man you find in the story-books. One of the men present said his language was Shakespearean, which was a polite way of signifying that he used the simple and unvarnished argot of America. What he says he says pungently and directly with all the force of his taut and bristling but slight person. There is never any remote doubt what he means. When he talks to FDR he says it in a curiously mixed jargon of the Far West and the Sea. The Admiral was brought up on a ranch in Wyoming, in a family, says he, of eight; and when one was praised by the powers that be, the others were bound to take it out on him or her.

Admiral Land says our shipbuilders on the West Coast are "spark-plugs." He says you people out there are turning out from 1½ to 3 times as many ships as they are producing in other shipyards. It gave him chuckling glee to recite how the westerners took some machinery that was in no sense devised for shipbuilding, and with pure ingenuity turned it into a gadget that increased output. He says you people out there have real morale, you start somewhere and you keep going until you get there.

Apparently Admiral Land regards this shipbuilding business as largely morale, the eternal gift of breathing life into an organization so it is animated with drive. You get the sense that elsewhere the old conservatives are often building ships after the manner their grandfathers built them,

and that they resent new ideas, new adventures, new methods. Admiral Land feels that a large part of the lethargy that has possessed the shipbuilding industry elsewhere is simple "loafing." The term is his own. He thinks the unions fuss around over minor intra-union and inter-union business so much that they slow down the job.

You undoubtedly have heard by the time you read this that he wants us to "freeze present relationships" between labor and management "for the duration." He holds that "pacing" of workers should not be based on the slowest but on the medium performance.

Here in the capital we are inclined to feel that among the most outstanding men in this war set-up are Land and Gen. George C. Marshall, the Army Chief of Staff. They are as unlike, superficially, as a drawing room and a shipyard. But both have the deep identical quality of utter sincerity and absolute Americanism. You scarcely ever hear either man talk about patriotism, yet you feel both are the very epitomization of the patriot. They live it, they *are* it. Both are inherently and purely gentlemen. But the Admiral wraps his gallant spirit in the salty breeziness and home-

liness of the seafaring man, while Gen. Marshall is the suave, low-voiced, earnest scholar of his profession.

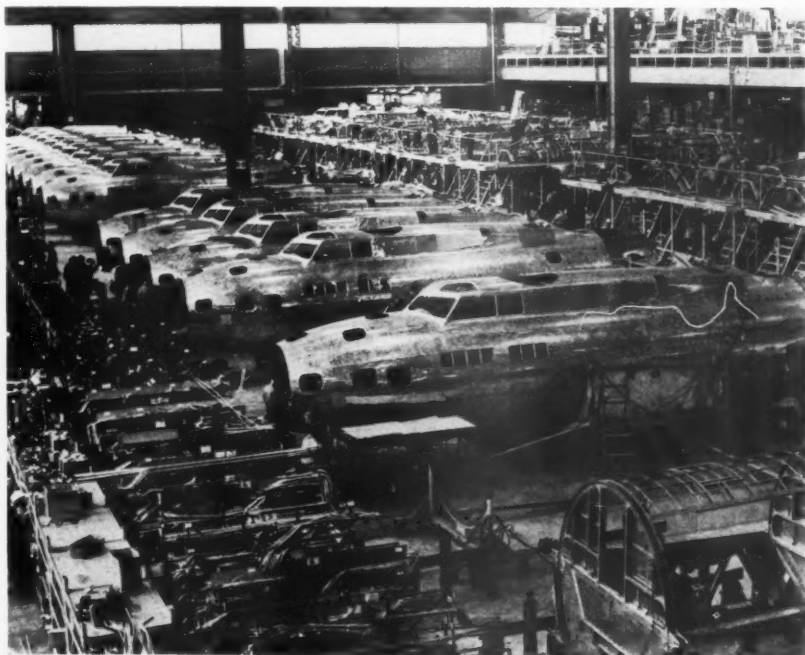
There is a burning quality of ardent effort in both of them that inspires utter confidence. They are the men who will furnish the leadership that will win this war. They stand out in contrast to some others we have here who spread gloom, probably not with intent, but who fill us with doubts despite ourselves.

At this writing it still is permitted to express opinions and to discuss American thought. A little frank airing of this kind of talk should be useful. Many persons are afraid to engage in such discussion publicly because they fear they may be smeared with the brush that might give them the color of Sixth Columnists. We are apt to think here that you people out there have preserved American individualism and American democracy in its truest spirit and at its best. You will serve your region, your industry, and your nation, if you give this situation thought and determine what you will do if you are confronted with the essence in the problem. It is not all pure talk. There appear to be some solid and substantial elements in the nation who believe what is talked.

Small Business Problem

A month ago the Small Business Advisory Committee of the WPB was called to Washington to talk over things with Donald Nelson. The members of this committee were chosen many months ago after their truly representative character as busi-

• Here shown is the modern airplane assembly line. Aircraft plants have successfully applied the methods of the automobile industry. First released wartime production photograph in one of the Boeing Aircraft Co. plants at Seattle.



ness men and as Americans had been carefully investigated by the government. They represent twelve regions roughly paralleling the Federal Reserve regions. Your region is represented by Ivan L. Johnson, of the Pacific Steel Casting Co., at Berkeley, Calif.

When the committee met here, Mr. Nelson was otherwise engaged and could not see them. He sent one of his chief aides, W. H. Harrison, head of the construction agencies of the American Telephone & Telegraph Co. in normal times, and now the Director of Production for the War Production Board. W. B. Connell, West Side Machine Works, committee member from Kansas City has recorded in writing his impression of Mr. Harrison's statement that "Mr. Nelson did not want to be bothered with small business, and if small business could not take care of itself it would have to fall by the wayside." Mr. Connell observes: "That statement to my mind is serious. If we continue to wipe out small business, and place all production in the hands of a few, it will be just another step to bring all productive capital under public ownership. Personally, and above all, I want to see our Democratic system survive. There is no room in *any* part of the country for either socialism or Communism."

But Mr. Harrison delivered himself of another sentiment, which Mr. Connell holds "after a lot of thought as amazing and serious." The Harrison remark shocked and startled all members of the committee, and provoked discussion from one end of the country to the other. Finally, it so stirred Alfred G. Gaunt, president of the Merrimac Mills, at Methuen, Mass., that

he telegraphed the President's secretary, Stephen Early, at the White House as follows: "WPB Production Director William H. Harrison, speaking on Tuesday, March 17, 1942, in an officially called meeting in Washington, D.C., to the Small Business Advisory Committee, (a Government unit), appointed in accord with the President's Executive Order, said, in part, 'We are NOT fighting for Democracy; we are fighting to keep from being licked, and some of us are not sure this war can be won as a DEMOCRACY.' We hope Mr. Harrison's successor will be one who believes Democracy can be preserved."

WPB Views

There is reason to feel there is a fundamental conflict still within the inner recesses of WPB. A few days ago I received this message from one of the main chiefs of a WPB branch which is concerned with major elements involved in building and construction: "Recent measures will change the operating basis of the industry in which we are interested. That goes practically for all civilian industry, too. I think your periodical should advise its readers of the developments in store for them." This message not only had in mind the building and construction order which has stopped all work except that which is inescapably necessary for civilian existence, and War work, but it also had in mind the many orders that virtually will stop *all* civilian production in factories manufacturing metal work.

In a recent conference Donald Nelson told us that between May 31st and June 15th plants using metal either will be converted to War work or absolute essentials,

One of the best-informed writers at the Nation's Capital, Arnold Kruckman, presents each month pithy comments on political developments and their practical application to industry of the West. Any reader who wishes additional information may write to him directly, using business letterhead, at 1120 Vermont Ave., N.W., Washington, D.C. Inquiries will be answered free of charge. Copies of pending congressional bills may also be obtained free of charge.

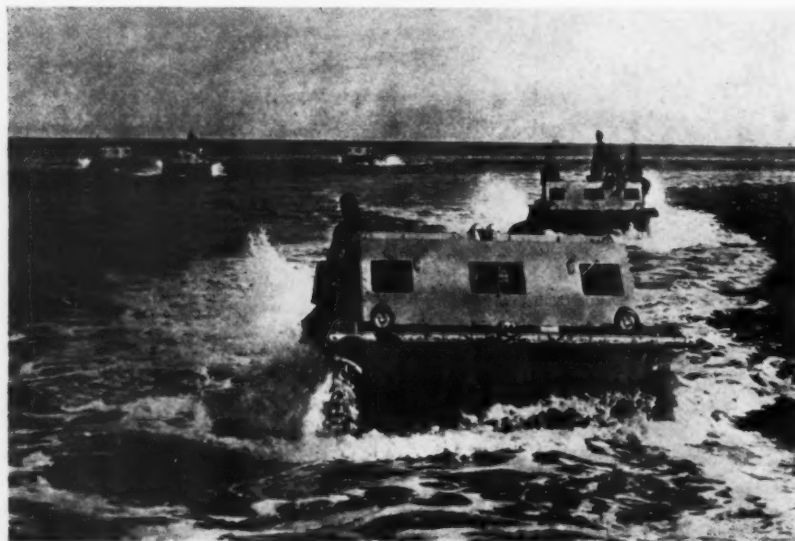
or will be closed down. It has been repeatedly brought home to us there are no critical materials for unessential civilian needs. We were told by W. L. Batt, another Director of WPB, that there is such an acute shortage in steel and iron that not only Army and Navy are clamoring for it, but that there is heated competition between the shipbuilders, the transportation agencies, and the agencies responsible for the development of synthetic rubber.

Mr. Nelson was quite frank in suggesting that it was probable thousands of smaller plants might temporarily, even permanently, be wiped out. He regarded them as casualties no different from casualties of the battle field. Nelson and Batt and others of the group bear down heavily on the premise that the gadget must go. To them the gadget is the mechanical stoker, the thermostat, the electric iron, the electric washing machine, the electric refrigerator, the percolator, and the hundreds of large and small things that save labor and use electricity as well as critical materials.

To complete this picture, however, it is proper to give the other side. Within the WPB itself, in the section that has to do with a large part of metal wares production, and which is immediately concerned with Contract Distribution, there are men just as enthusiastic as those who follow the Nelsons and the Batts who believe there is no real scarcity of steel and iron. Mind you this information comes from within WPB itself. It is off the record and informal but nevertheless it reflects what they think. They point out that early in 1942 one of the great national corporations, vitally concerned, spent over a million dollars to make an accurate survey, and reported that not more than 25 per cent of the steel and iron then produced was going to War work. They hold that there is still a large surplus of steel and iron which may be had by those who know how to get it without benefit of WPB priorities or other Government aid. They call this leakage. They say the leakage occurs because the manufacturers of steel plate, sheet, and strip, make it possible to secure the material. It is pointed out that recently there was, for instance, a large production of metal window sashes

(Continued on Page 24)

• The war in the Pacific has forced us to revise our war production plans. Original plans called for a huge production of land tanks. Now amphibian tanks are going into production on a large scale. Photo—United States Marine Corps.

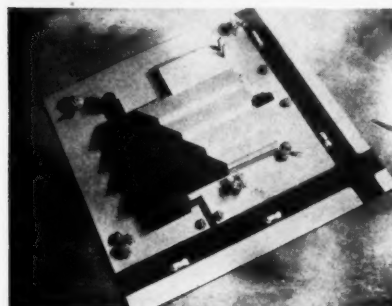
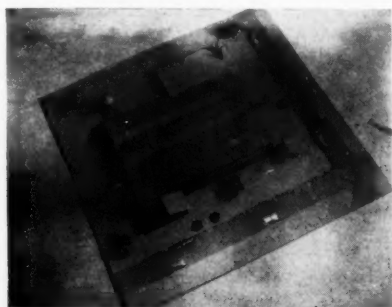


CAMOUFLAGE

NO TWO camouflage jobs are alike. This applies especially to camouflage jobs designed for protection from aerial observation. Every objective requires the analysis of a specialist and such men are now being trained under a program undertaken by United States War Department engineers. Selected architects are heading up "camouflaging units."*

Practically in the front lines, operators of Pacific coast plants are seeking advice on camouflaging methods. Manufacturers, municipal and utility authorities, petroleum producers and refiners and all others interested in camouflage are being advised to consult regional unit headquarters for advice. In California, it is the State Association of California Architects.

One costly lesson of this war is that color alone in camouflage paints effects no permanent relief from accurate bombing, despite the cleverness of its application.



* Effects of infra-red photography on new army tested heat-deflecting paints shown by views of model of factory. Upper shows scene as it appears to the naked eye. Ordinary paint used to cover portions of the model; colors matched with new camouflage paint on remaining portions. Lower shows result of same view taken with infra-red photography. Ordinary paint appears black; new paint which deflects the infra-red appears light.

If lowered visibility can be considered the primary function of camouflage paints, certainly the newer warfare has revealed a close second. For equipped with infra-red cameras and rapid developing facilities, observers quickly can spot on their film any surfaces or areas on which ordinary

paint had been applied—recorded as black against the white of natural terrain. Modern chemistry only recently has solved this problem, through an infra-red (heat) deflecting paint.

Proved and already in accepted use is a series of dark colored heat-deflecting paints. They defy the infra-red lens; while also maintaining lower inside temperatures of sun-exposed objects whose surfaces are painted with them. These are permanent, durable paints which differ only in pigmentation adjustment from accepted exterior paints.

Good painted camouflage is conceded to require both light and shadow combinations in order to resemble surrounding terrain. A wide range of low-visibility colors is desirable, ranging through the dull browns and greens. With infra-red paints has been designed a camouflage paint which has the same color range but appears black (or shadow) in infra-red aerial photography. According to extensive testing, these two paint series in combination afford the camoufleur as useful a range of concealment paints as has yet been produced.

The heat-deflecting factor of infra-red paint has an added significance, say the chemists. Petroleum and other industries where liquid storage is required face sizable evaporation losses when they paint their tanks with ordinary dark colored paints instead of the standard white or aluminum. Controlled seven hour sun-heat tests disclose the ability of this paint to deflect heat to the extent that inside temperatures of test objects remained about ten degrees lower than similar object painted with the same color of ordinary paint; and but five degrees warmer than the aluminum painted containers.

*Pertinent data on camouflage furnished by Premier Oil & Lead Works, Los Angeles.

The tremendously accelerated pace at which orders have been placed for war supplies and equipment since the Japanese attack on Pearl Harbor was revealed late in April by WPB. Contracts and other commitments during February amounted to \$20,892,000,000, compared with \$8,414,000,000 in January, \$5,132,000,000 in December and \$1,782,000,000 in November.

Commitments embrace contracts, letters of intent and other obligations incurred by the United States Government for war purposes, including expenditures for the pay, subsistence and travel of the armed forces during the month. Between June, 1940, and the end of February, 1942, such commitments had reached a total of \$81,835,000,000. This was three-fourths of all funds voted by Congress for war purposes or made available by the Reconstruction Finance Corporation and its subsidiaries.

PACIFIC BOSS

MEET THE real boss of the West, General John L. DeWitt, USA, headquarters San Francisco. In addition to many tangible evidences that we are at war, a new one was added recently with the issuance of proclamations. These affected the Japanese evacuation to inland points. General DeWitt has some measure of power affecting the lives of each and every one of the 12,000,000 inhabitants living in the Western Defense Command which includes California, Oregon, Washington, Nevada, Arizona, Utah, Montana, Idaho, and the Territory of Alaska.



GENERAL JOHN L. DEWITT, U.S.A.

General DeWitt's job is four-fold. He is:

1. Commanding general of the Fourth Army of the United States.

2. Commanding general of the theatre of operations of the Western Defense Command.

3. Commanding general of an area through which move thousands of troops, huge amounts of war material to be shipped to the Pacific war fronts, and in command of all defense measures.

4. The supreme authority in war time civil control of enemy aliens and Japanese citizens with power to move them and confine them in certain areas. As military defense needs dictate he has some measure of power over business and industry. By his order, the winter race meet at Santa Anita race track was abandoned. The track has since been taken over by the army as have some large hotels in southern California.

Portland, Ore. employs 30,000 men in its shipyards and soon will start to more than double employment. Oregon Shipbuilding Corp. there, newcomer to the business is sending down the ways each week, one Liberty 10,000 ton ship.

JAP EVACUATION

Mass Exodus of Nipponese from Coastal Areas Has Started With Concentration of Thousands in Southern California—Their Prompt Removal Poses Some Interesting Problems Here on the West Coast

THERE were few if any dissenting voices last month outside of those directly affected when a series of exclusion orders issued by the Wartime Civil Control Administration barred non-citizen Japanese and their American born progeny from various areas on the Pacific coast. Mass evacuation started early last month and Japs were taken away from different areas by automobile caravans, busloads, trains and their own private cars to be housed in well prepared quarters at beautiful Santa Anita race track near Arcadia in southern California. Later they will go to inland points at sites now being selected.

Had there been any dissatisfaction with the mass removal of the Japanese which eventually may remove 112,000 Japs from those states bordering the Pacific ocean, it might conceivably come from those industries which suffered temporary discomfort. For the Japanese during the past two decades had become so interwoven with the west's economic structure, mainly in low-paying jobs shunned by white workers, that their removal brought about definite and unsettling repercussions.

To start with, there is a definite agricultural labor shortage here in the western states. Forty-five per cent of all Jap gainful workers here were engaged in agricultural pursuits. In 1940, Jap farmers in the three Pacific coast states, California, Washington and Oregon, operated 6,118 farms containing 260,000 acres valued at \$72,000,000, representing 2 per cent of total farming activity.

Northern California canners principally and those in other areas have been worried since the early-December trading ban with Japanese. For years they have been relying upon Japs for a substantial part of their vegetable pack. Early spring saw the canners worried particularly concerning the tomato crop just ready for transplanting in the fields. Extensive contracts were held with Japs up and down the coast for tomato and other crops. The situation improved somewhat when the Federal Reserve Bank, 12th district, with headquarters at San Francisco, was designated as custodian of the Jap properties. While not permitted to work these properties, Japanese can now dispose of properties or contract with others to grow their crops and take care of commitments. An idea to bring mid-western farm labor to grow the crops was out because there was no labor available. The situation is still admittedly bad but canners are hoping for the best.

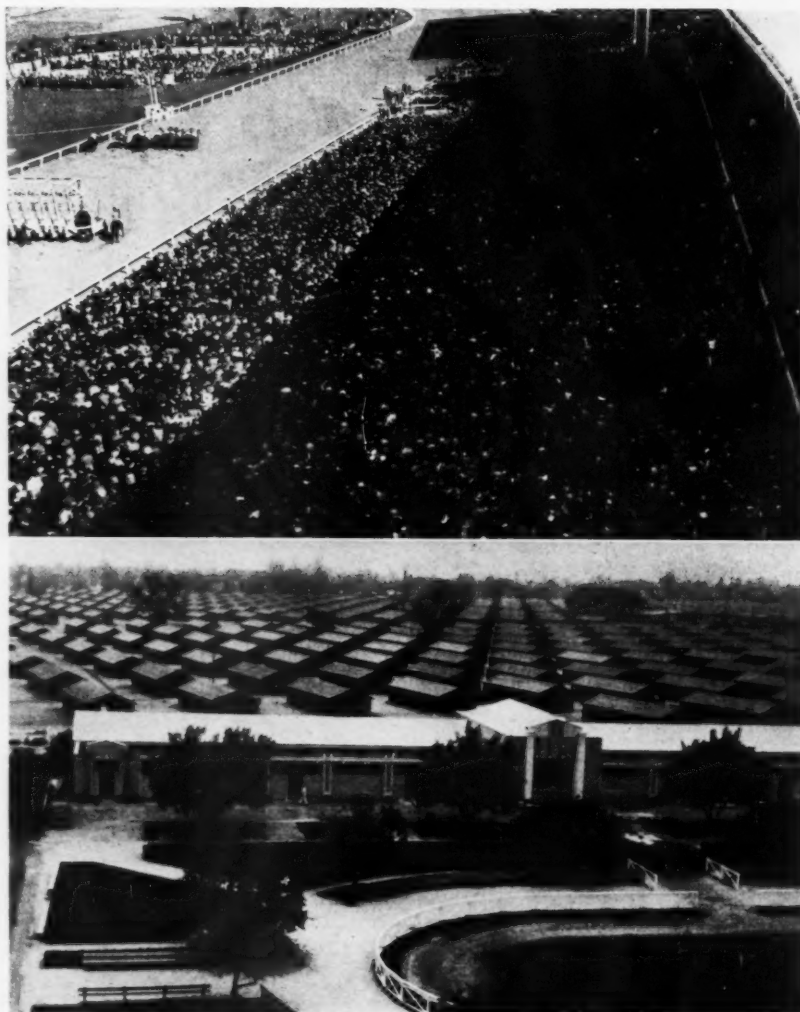
Fishing and fish canning operations were

likewise affected as a result of the Jap exodus. This Jap segment was largely in the south at San Pedro and Wilmington, Calif. for in San Francisco native born Italians were in control of the situation. At Los Angeles when the enemy trading ban of December went into effect, it was found that the produce business was largely in the hands of the Japs. The vegetables were there but it was found that they could not be handled. Jap facilities did not function. In California as a whole, it was shown that

35 per cent of all truck crops in recent years have been produced by Japanese.

At Seattle, according to the testimony brought out by the Tolan congressional committee on National Defense Migration, it was found that the Japanese operated almost two-thirds of the hotels in that city. These were mainly lower priced hotels patronized by the laboring classes. But their continued operation was necessary mainly on account of an acute housing shortage. Many Japanese in Seattle also operated restaurants serving moderately priced meals to defense workers, *something hard to find in that city*. Evacuation of 4,700 Japs here engaged in domestic service poses the old "servant problem." Some 7,000 workers engaged in retail trade have to be replaced while another 1,500 operate laundries, cleaning and dyeing services in that city.

• View of the jam-packed grandstand of the Santa Anita race track near Arcadia, southeast of Los Angeles. (Upper) The race track has been taken over by the Army as a concentration point for Japanese, who later will be moved to permanent locations. Several thousand housing units cover huge parking area.





• By bus, train and caravans of private cars, hundreds of Japanese are journeying each day to the Santa Anita concentration point. (Upper) Use of private cars is permitted for the trip but not thereafter. (Lower) Mom, pop and sonny here are apparently trying to beat the line to cafeteria. The food served is of excellent quality and adapted to native tastes. (Exclusive photo—Pat Dowling Pictures.)

Pertinent facts and figures as to the extent to which the Japs had become imbedded in the economic structure are furnished by a survey compiled by the Federal Reserve Bank of San Francisco on the Economic Implications of Japanese Evacuation. Here conclusions reached are: that evacuation of all Japanese farmers from designated military areas will create major problems of readjustment; some loss in production of truck crops will result. It may be 10 per cent; it may be considerably less. Actual losses will depend on method and speed of evacuation.

The survey points out: that the three counties in which the cities of Los Angeles, Seattle and Tacoma are located contained 33 per cent of all Japanese farms in the three coast states, and within these coun-

ties the Japs in 1941 controlled 63 per cent of the truck crop acreage.

Also: the Japanese community which has grown up in the Pacific coast states has found its place in the economic life of this area largely in low-paying occupations generally shunned by white workers. The bulk of the Japanese enterprises return a living income only through hours of toil. It is doubtful, with the need for defense employment if other workers can be found to carry on under those same conditions the enterprises of the Japanese which must now be evacuated.

The survey points out that the evacuation of the Japs will affect poultry producers in a unique manner. Japanese predominate in the occupation known as chick-sexing. Of the 138 certificates issued in

California by the International Baby Chick Association, 96 of these papers are held by Japs. All of them are citizens since certificates are not issued to aliens.

The importance of chick-sexing stems from the fact that the sex of baby chicks can be determined during the first two weeks of life without waiting for two to three months later when characteristic sex features develop. Thus male chicks can be disposed of immediately by those growers interested primarily in egg-growing.

The Jap servant problem has some enlightening aspects. Many families in the medium or small bracket income class will now have to go servantless. This applies largely to the Seattle and Los Angeles areas. For, believe it or not, many of the younger generation of Japs would work literally for board and keep; a job paying \$2 weekly with keep was a good one—anything to gain a foothold in the economic structure. This applied mainly to many of the younger generation born here by some circumstance and educated largely in Japan who returned to this country to complete their "education." This type had "dual citizenship," so-called. Though born in this country, the Japanese government refused to release them from citizenship and so they were able to travel back and forth between the two countries without hindrance. One Los Angeles housewife who took advantage of this situation by employing a Jap servant boy for \$1 weekly with keep, was surprised one day when two frock-coated Nipponese called. They were there to inquire how Toyo was doing; to investigate his cultural surroundings and living conditions. It subsequently developed that the young Jap boy was the son of a wealthy Tokio importer who was here absorbing culture with a net return of \$1 weekly. He was attending the Los Angeles High School regularly; all this was part of the deal.

Shade of Seabiscuit whose life-size statue still stands at the edge of the paddock of the glamorous Santa Anita race track! The paddock itself has been boarded up and is being used for offices in connection with administration to take care of upwards of 5,000 Nips who late last month had been concentrated here for later removal to reception centers such as Manzanar in the Owens valley of California, to Parker, Calif. on the sandy reaches of the Colorado river shore and to other places to be prepared.

Hundreds of barns in the Santa Anita stable quarters have been converted into comfortable two-room dwellings. The huge Santa Anita parking lot where it is said more automobiles were gathered in one place than in any other spot in the world is now covered with several thousand newly erected dwellings. Excellent food is served in nearby cafeterias.

The evacuated Japanese are well taken

(Continued on Page 24)

PLYWOOD DOES THE JOB

This Material Has Come Into Its Own During the Past Year—The War Ban on Use of Steel for Civilian Needs Has Given Further Impetus to an Expanding Demand—Many New and Varied Uses

PERHAPS the most widely publicized war-born manufacturing development is the introduction of plywood airplanes in which to train our air forces. It has caught the fancy of our people and bolstered their spirits; more important, it will speed expansion of our air fleet.

And right on the heels of this advancement comes word from Portland, Ore., that the first all-plywood lifeboat has withstood the toughest tests devised by U. S. Coast Guard inspectors. The 31-passenger crafts may be turned out in quantity, each one saving 2,300 pounds of steel to go into other war equipment.

Startling in themselves, these plywood products are more important as examples of the part plywood is playing—and can perform—in an American industry today. There's another aspect—one vital to all manufacturing businesses—the behind-the-scenes applications of plywood where plant operators chose the panels because they do the jobs better than any other material regardless of availability of the latter. Actually, this switch to plywood was widespread before the emergency arose.

Liggett & Myers Tobacco Co. developed a more efficient method of handling leaf tobacco by making the tobacco hogsheads (barrels) of fir plywood rather than oak

staves. The new hogsheads are prefabricated, last longer, simplify shipment, storage and re-shipment. Airplane engine crates are plywood as are cold storage plants, proofing cabinets for bakeries, railroad cars, patterns for welders, assembly jigs for aircraft parts.

These varied uses provoke interest among plant owners, managers and superintendents because industry right now is being recast to win the war which is clearly a battle of production. And this reshaping of the manufacturing efforts means not only re-tooling to produce war implements but also abrupt changes in methods and materials used along assembly lines in the plants making war machines and those now secondary industries continuing to produce for civilian needs. Plywood many times can serve as an important ally in making the changeover feasible.

However, whether plywood can do a new job or accomplish the established job better in any particular plant or single operation must depend upon an examination of the properties of the material. One basic attribute of the material is that it is pound for pound stronger than steel. It is real wood, comes in big sheets easily worked, can be readily bent and has great rigidity when in place.

Actually, plywood isn't new. It was used industrially as early as 1850 in the manufacture of pianos because plywood would hold the tuning pegs tightly once they were set. Commercial production of fir plywood began in 1905, but it was not manufactured in quantity until about 1925; since then its importance to industry has grown continuously until it has developed from a specialty item into a basic commodity. Since 1938 it has gained such pre-eminence in the construction field that today it does more different building jobs than any other single material and the bulk of the output goes to that use. However, its industrial applications have continued to grow.

Plywood is manufactured by bonding together thin sheets of veneer so the grain in each ply is at right angles to the plies on either side. The panels are built up of odd numbers of plies, usually three, five or seven. Most popular size of the fir plywood panels is four by eight; smaller panels of course are available and sheets as large as 35 feet long and 6 feet wide are made. Usually, the sheets are from one-eighth to one inch thick, but here again thinner sheets are manufactured and panels several inches thick have been built up for special assignments.

There are two basic kinds of plywood; those made of softwood veneers and those manufactured of hardwoods. The latter panels are produced in comparatively small quantities and are, of course, more expensive than the softwood products. For the most part the hardwood panels have been used for interior walls and furniture. However, the new plywood airplanes so far

• A whole new field of construction—prefabrication—came of age during the past year. Already there are many ramifications and potentialities. Mass production of building parts uses are almost limitless. Newest utilization is construction of prefabricated housing units and schools at San Diego and Vallejo, Calif. View of Vallejo school nearing completion.



are of the hardwoods and molded to the shape of the fuselages and wings.

In the industrial field and in construction of houses and buildings Douglas fir plywood is the most important of the laminated panels although some pine plywood is produced. Production of fir plywood (this year the output will reach two billion square feet) is many times that of all others. The fir panels are produced in two types and several grades (of each type) in accordance with the commercial standard as approved by the U. S. Bureau of Standards.

The two types are exterior (waterproof) and moisture-resistant (interior) panels. The moisture-resistant panels are the type produced since inception of the industry and have plies held together with soy bean and casein glues. These are the panels used for inside applications wherever the panels are not to be exposed to water or not to be subjected to conditions which would raise the moisture content of the wood to more than 20 per cent.

It is the exterior (waterproof) type plywood that has opened whole new avenues of uses and which today is attracting widespread attention. The plies are bonded together with synthetic resin adhesives which are completely waterproof. These adhesives are set by both heat and pressure and the panels will withstand weather, water or alternate wetting and drying.

Plywood capitalizes on the inherent



strength of wood but improves upon nature's product. Along the grain ordinary wood is known to have great strength and to be virtually free from expansion and contraction. Across the grain, however, there is comparative weakness and a definite tendency to expand or contract under different moisture conditions. Plywood,

with its alternating grain direction, distributes the strength in both directions, while any shrinkage tendency cross-wise is minimized by the bond with the adjacent longitudinal-grain veneer.

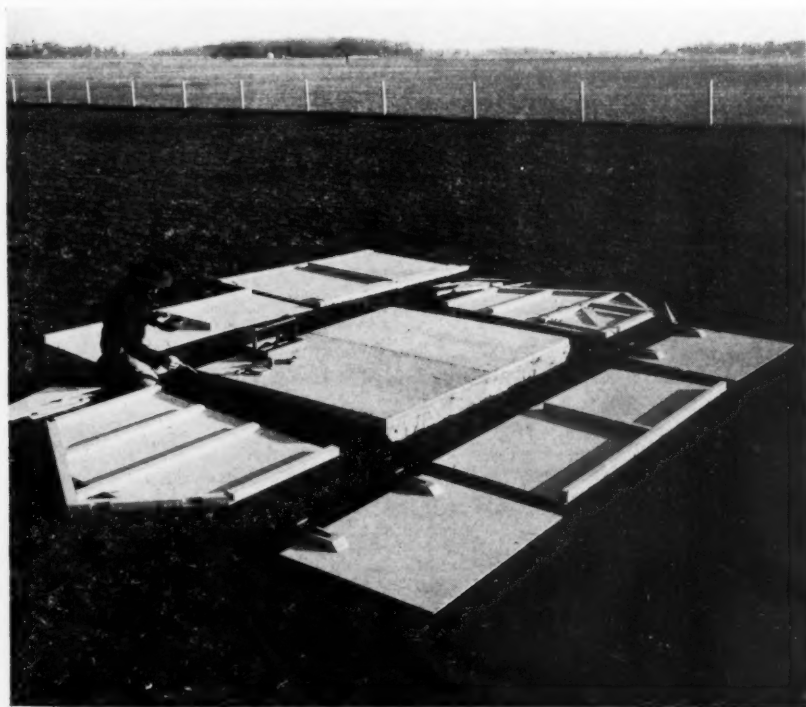
Cross-lamination also prevents splitting of plywood panels because there are cross-grain veneers on both sides and ends of a panel. An odd number of veneer sheets are used to give a balanced, symmetrical panel construction thus minimizing warping, cupping or twisting.

That plywood is pound for pound stronger than steel has always proved a major factor in the assigning of increasing numbers of jobs to the material. This attribute is especially true when tension tests and other stresses are applied; however, in compression, the wood panels will not bear the loads that will some of the metals. Engineers may design with plywood just as with any other structural material. In calculating cross-sectional areas, moments of inertia and the like, usually only those plies running parallel to the main stresses are considered. This results in conservative design as has been demonstrated in numerous laboratory tests. (Technical data on these matters are available from Douglas Fir Plywood Association at Tacoma, Wash.)

Regarding the weight of plywood, the $\frac{3}{8}$ -inch thickness of Douglas fir plywood weighs slightly more than a pound per square foot. Actually, the $\frac{3}{8}$ -inch sheets weigh an average of 1.13 pounds per square foot; $\frac{1}{4}$ -inch panels 0.79 pound per square foot and the inch thickness 3.00 pounds per foot. Plywoods made of other wood veneers are of different weights.

In bending plywood it must be remembered that the panels are made of odd numbers of plies so there is one more ply with grain lengthwise than crosswise. This

• Here are the prefabricated plywood parts for a hog house as they arrived at the farm (below). Liggett & Myers Tobacco Co. called upon Douglas fir plywood for thousands of tobacco hogsheads (above). Formerly these were made of hardwood staves. Another adaptation of plywood to new fields.



means the arc to which the panel can be bent along the grain of the face plies is necessarily larger than the minimum crosswise arc. Minimum radii established for fir plywood include: for 1/4-inch panels, 24 inches lengthwise and 15 inches crosswise; for 1/2-inch panels, 8 feet lengthwise and 6 feet crosswise; for 3/4-inch panels, 12 feet lengthwise and 10 feet crosswise.

Other properties of plywood include relatively good insulation values. It has the same coefficient of heat transmission as the wood from which it is made. In house construction it has been found that plywood contributed to insulation of a wall in a second way. Because plywood-lined walls are air tight, a dead air space is created which serves as added insulation. This factor may be of consequence also in certain industrial uses.

Finally, the panels are easy to paint, or they can be finished in several other ways as well. Plywood, when properly used, needs only the same paint protection that is given any wood. If exposed to the weather the exterior type panels should be used and given three coats of good exterior paint with the first coat thinned with linseed oil. For marine uses, marine paints should of course be chosen. Standard practice in applying plywood panels that will be permanently exposed to the weather or water includes the knifing on of a thick lead and oil paste over panel edges before they are installed.

Interior Uses

Plywood to go into interior uses or equipment that will be used inside a building will be the moisture-resistant type and can be painted in the conventional way. Light stain finishes which subdue grain contrast recently have been developed and have become popular because they have distinct appearance values.

While an understanding of the properties of plywood leads to wider utilization of the material, more impressive and provocative are the uses to which it already is being put by various industries. The case of the tobacco hogshead, mentioned previously, is outstanding because from all appearances the plywood barrels do the same job in the same way as the material used previously.

The point is, that in the opinion of the tobacco firm, the new hogsheads do the job better. These hogsheads are multiuse containers. Tobacco is put in the barrels at the warehouses, shipped to a redrying plant, unpacked, repacked after drying, stored for two years, unpacked at the stemmery and repacked for shipment to tobacco factories. Emphasis therefore is on construction of the containers so they can be economically packed and repacked and material that will stand constant abuse.

Operators of quick-freezing plants for fruits and vegetables and public refriger-

ator lockers have utilized vast quantities of the exterior (waterproof) type plywood for lining the rooms and for making the individual cabinets. In most of the freezer rooms the temperature is as low as 20 degrees below zero, and the storage rooms are of course below freezing. One advantage of plywood in these instances is that the panels will withstand severe shocks that accompany the filling and emptying of the rooms. The walls are easy to maintain in a sanitary and attractive condition merely by painting.

Many of the freezer companies blow the cold air through plywood ducts and this application itself suggests uses for the panels in additional West Coast manufacturing plants.

Under sharply contrasting conditions, plywood has become an established part of many bakeries up and down the coast. Hundreds of plywood proofing cabinets—those sizable rooms in which bread is placed to raise before it goes in the ovens—now are in use. Some of the units will "proof" as many as 3,500 loaves of bread at a time. The cabinets serve as torture chambers for the materials from which they are made. Most bakeries maintain a temperature of about 90 degrees and humidity of about 85 in these rooms. So moist is the air that it is difficult to breathe when rolling trays of bread in or out of the cabinets.

While marine uses of fir plywood at first were limited to small pleasure crafts, today the panels do a master job as bulkheads, cabinets and built-ins for vessels of all sizes. The bulkheads of the much-publicized torpedo boats are of fir plywood; superstructure and compartments of many coastal patrol vessels are of the panels. A thorough test of the durability of plywood has been made aboard the freighter S. S. Herman F. Whiton. For six years plywood sheets have covered the lifeboats of the ship and the ship's storeroom now always has a stock of plywood for the thousands of applications aboard ship.

Easily Shaped

Plywood cutouts, easily shaped by a bandsaw or hand jigsaw, offer infinite possibilities to the manufacturer making various types of assemblies. First applications of this type were the cutting of letters and shapes in making of window displays, roadside signs and theater signs that have to be changed frequently. The ease with which plywood can be shaped establishes it as an ideal material for the cutouts. Then too, the availability of big panels in various thicknesses allows selection of sheets that will do the specific job at hand.

Gusset plates, used primarily for transferring stresses from horizontal to vertical framing members in buildings, utilize to full extent the inherent strength of plywood. In smaller buildings relatively thin plywood panels will do this structural

work; in larger construction plywood plates several inches thick are required. To the builder of boxes, containers or units of considerable size, these plywood gussets stand out as invaluable aids.

Seemingly remote from industrial utility, the outstanding building development of the past year—prefabrication—may incite new methods of manufacturing many items. Actually, prefabrication means the mass production of big sections of buildings. Houses, farm structures, schools, roadside stands, now are being erected almost overnight from standardized sections "manufactured" in prefabricating plants. More than 15,000 houses have been erected for families of war workers; another 100,000 are to be formed this summer.

Prefabrication has come of age during the past year, and dominating the scene are the shop-built wall, roof, and floor sections of stressed-skin construction with plywood glued to the framework. By bonding the panels to framework the walls themselves carry much of the load of the building thus allowing use of light framing members. The success of prefabrication has been due to a large extent to the adaptability of fir plywood to meet a new structural need.

The advancement in techniques of using glue and plywood to gain strength with minimum weight can be carried to other types of construction and manufacture. Similarly, the widespread use of the plywood panels in diversified applications presents the potentialities of the material. Plywood, already tabbed as the wood of 1,000 uses, is proving one of the elements in the revamping of our production methods to meet new conditions.

Concrete Columns

Use of reinforced concrete columns in place of steel avoided procurement problems and made possible completion of a 400 x 62 ft. shop in the fast time of six weeks at one of General Electric's works recently. By this and the added expedient of using reclaimed hard pine for the rafter beams, an estimated 150 tons of steel were saved in the construction of the building. Conservation was further effected by using reclaimed steel beams for a ten-ton crane runway.

WPB Unit

Formation of a WPB pulp and paper industry advisory committee was announced recently. The members include: Walter A. Starr, Soundview Pulp Co., Everett, Wash.; D. H. Patterson, Fibreboard Products, Inc., San Francisco; Robert B. Wolf, Weyerhaeuser Timber Co., Longview, Wash.

NEW TYPE RAILROAD CAR

Three Western Railroads Are Testing Their Three Car Unit Designed on New Principle of Suspension Which It Is Claimed Permits Higher Speeds, Reduces Vibration and Controls Lurching

SEVEN years ago when the American public was cheering the new fast streamlined trains as they flashed across the countryside, an idea was born in the mind of William E. Van Dorn of Pasadena. These new high speeds had developed new problems which needed ironing out—passenger discomfort at high speed and attendant maintenance problems. This west coast inventor wanted something basically new which would provide greater comfort and speed than had ever been attained on steel rails. The idea was this—hang the car body from the trucks instead of balancing it on top of the trucks.

After some research and development in collaboration with Dr. F. C. Lindvall of the California Institute of Technology, the idea was presented to John K. Northrop (himself an inventor of no mean ability and president of the aircraft unit which bears his name) and to Cortlandt T. Hill, son of Louis W. Hill, ex-president and chairman of Great Northern Railway. Construction of a full scale two-car model was started.

The car bodies were built entirely of plywood with pine ribs and stiffeners patterned after the popular semi-monocoque or skin stressed construction used so extensively in the aircraft industry. The specially built trucks supported these wooden car bodies well above their center of gravity

on tall coil springs so that in negotiating a curve the car bodies "banked" as does an airplane. Conventional side lurching was eliminated. On completion of these cars in 1937 observers on test runs said there was practically no "side lurching."

After the Santa Fe Railroad test department had taken instrument records at speeds of 100 miles per hour and more, the results brought about orders to its sponsors, Pacific Railway Equipment Co., Vernon, Calif., for a chair car. Followed two more orders for a car each for Burlington and Great Northern Railroad. The Santa Fe car was delivered last November and has been running between Los Angeles and San Diego, though not publicized. It is usually crowded by people who have learned of its existence through the grapevine and all anxious to observe its riding qualities. Recently have been delivered the two additional cars. The three cars form a train which is being tested in turn by each of the three railroads involved. Due to war emergencies, further orders for the time being are out of the picture. When the material situation eases up the sponsors believe there will be a large demand at least for this type of truck for installation in already existing equipment.

A railway car body must be placed upon its trucks so that its weight may be transferred through the trucks to the rails. At

the same time, the car body must be isolated from these trucks to provide comfort for those riding within. Passenger comfort depends on many things, but a great source of discomfort is an excessive vibration transfer from the truck to the car body. Other sources of discomfort are jolts on rough track, and lateral lurches and body rolls on curved track.

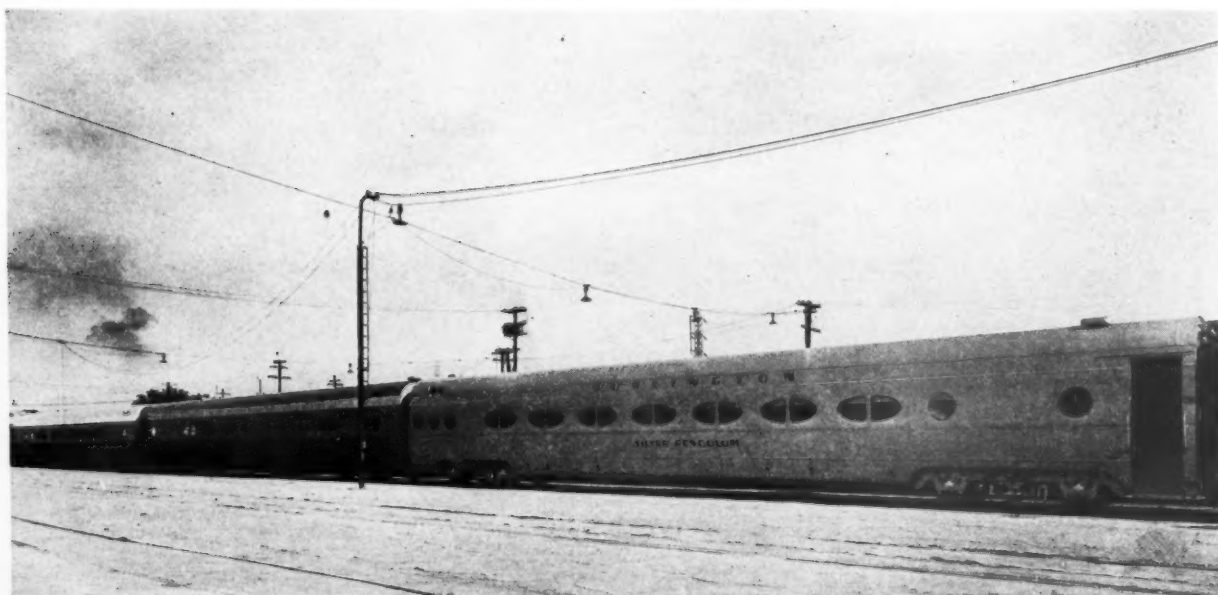


• Fig. 2. Coil springs placed on special trucks are said to eliminate side lurching.

Every railroad curve is designed for a limiting speed. If a car goes into a curve at the speed for which it was designed, there is no lurch or body roll. If, however, the car is traveling at a higher speed, it lurches as it starts into the curve, and then the centrifugal force acting on the car causes an uncomfortable roll of the car

Continued on page 30

• This three-car unit was designed on the new principle of suspension. The bodies were built entirely of plywood with pine ribs and stiffeners patterned after the skin-stressed construction used in the aircraft industry.



CHINA'S AGRICULTURE

Unorganized Production of Crops and Lack of Any Great Quantity of Industrial Labor Are Discouraging Factors in Viewing That Country's Outlook—Coordination of Economic Factors Is Lacking

By DR. H. D. FONG
Economist and Expert on Chinese Affairs

AS TO THE agricultural resources of China, the greatest setback to industrial development is sporadic, unorganized production. Industrial crops, such as raw cotton, wool, and wheat, are not graded or standardized. As a result, any manufacturer in China would have to double or triple his purchases before a satisfactory assortment can be made to suit his production needs. It is thus not unfamiliar for Chinese manufacturers, under such handicaps, to prefer foreign to Chinese raw materials; for example, to use Australian instead of Honan wheat in Tientsin mills. Chinese agricultural production, which is heterogeneous, irregular and uncertain, has failed to give due consideration to the needs of Chinese industries, while industrial production similarly has neglected to make known its requirements to Chinese agriculture.

The failure to coordinate agricultural development with industry has its serious repercussions on national production, and it was only recently that attention had been drawn to this aspect of Chinese economy. It is proposed that in order to meet the raw material needs of modern industries operated on a large scale, the small-scale agricultural producers be united into cooperatives for the attainment of

uniform and quantity production through control over seed standardization and crop marketing.

The scarcity of industrial labor in an agricultural country like China is another factor which retards her industrial development. Industrial labor requires not only skill, but also discipline. In England, the two waves of labor immigration, the Flemish during the fourteenth and the Huguenots during the sixteenth, laid the foundation for the development of her premier industry, namely, cloth manufacture. Alien labor found a congenial home in England because of the similarity in culture and standard of living. China, in the course of her industrialization, could not afford to rely on foreign labor, as her standard of living prohibited the employment of high-priced western industrial workers except for filling the managerial and technical positions. Chinese labor, primarily agricultural, did not possess the necessary skill for the operation of complicated machines and tools imported from abroad.

Again, accustomed as Chinese labor has been to the traditions of guild or domestic industries, it lacks the very discipline which is indispensable to the successful production under the factory system—a phenomenon not uncommon among the handloom weavers of England in the early days of her Industrial Revolution. The port

cities where factory industry first was introduced, for example, Canton and Shanghai, naturally were faced with the problem of industrial labor supply earliest. After decades of development, these cities began to build up a reserve of industrial labor to which other centers looked for supply. Thus, many of the factory workers in Tientsin and Tsingtao cotton mills, in North China, had to be drawn from these cities in the South.

Today, the war has forced many of the industries to migrate from south and central China to the Great Southwest, and with this migration also have been transferred the industrial workers of Shanghai, Wusih and even Hankow. These workers now constitute the nucleus through which a new army of industrial labor has to be recruited and trained from the agricultural population in the Southwest. The quantity immediately available for factory employment is inevitably small and insufficient for the purpose of large-scale industrial development.

Industrial Labor Supply

Industrial labor in China as a whole did not amount to over a million even before the present war; what with the destruction of the war and the dispersion of such labor in the course of the war, China must feel more keenly than before the shortage of industrial labor supply. Unless an extensive program of industrial training be launched by government or industry, the scarcity of industrial labor may constitute another stumbling block to China's industrialization, whether during the war or after its conclusion. On the other hand, given freedom of development after the abolition of the "unequal treaties" referred to in a subsequent section, scarcity of industrial labor may hasten the need for semi-annual mechanization as already has been the case during this wartime to some extent.

The scarcity of managers, entrepreneurs, engineers, technicians, and other members on the directing staff is another thorny spot in China's industrialization. In England, early managers of factories and industrial enterprises largely were successful merchants engaged in foreign trade. The term "merchant manufacturer," so commonly employed in England's cloth industry, refers to the merchant who gives out woollen yarn to the outworking weavers for weaving into cloth on wage basis, and it is largely from this class that early managers in woollen mills were recruited. In China, the early factories, being financed as well as operated by the state, were organized after the "Yamen" pattern. While the engineer might be a foreigner of second-rate ability, for in these days there was not sufficient attraction to engage men from abroad of first-rate training and calibre, the managerial staffs were filled with big or petty bureaucrats as the case demanded.

• China lacks farm machinery, roads and automobiles. Primitive type of field labor common throughout the land is here shown. When we win the war, a huge market for machinery for an awakened China is in prospect. One adverse factor will be the lack of funds with which to finance development.



In the course of time, these bureaucrats, seizing the opportunity for profit-making in certain remunerative branches, began to leave these factories and managed to raise funds among friends, relatives or colleagues for financing new enterprises of their own. Meantime, factories financed by foreign capital and staffed by foreign managers and engineers usually employed Chinese assistants on account of linguistic difficulties. These assistants, commonly known as "compradores" began to operate factories themselves once they had acquired sufficient wealth from their profession as middlemen and learnt the secrets of trade from their foreign superiors. In other words, it is from three classes that managers and entrepreneurs for Chinese industrial enterprises were recruited, namely, foreigners, bureaucrats and compradores. Gradually, three more sources of supply were added.

Emigrants Return

Overseas Chinese, having made a fortune from business enterprises abroad, returned to China to establish new undertakings in various fields of industry, and usually became managers as well as proprietors. Again, as the need for trained personnel became more keenly felt in the course of China's industrialization, the Chinese government began to send students abroad, first to Japan, later on to Europe and America, for advanced study in theoretical as well as applied aspects of various branches of sciences. Upon completion of their study abroad, some of these "returned students" came back to assume managerial and technical posts in different industrial enterprises. Finally, through cooperation with the League of Nations, the National Government of China has availed itself of the services of various technical experts in the stage plants engaged in the production of minerals, iron and steel, machinery, and electrical apparatus.

College Training

The most important source, however, remains that of graduates from the Chinese colleges and universities. Here, a large number of recruits are being drawn year after year into active industrial service. It is difficult to estimate the number of graduates annually available, but judging from the number of graduates from the pre-war year 1936-37 from universities, colleges and technical schools, namely 4,330, the recruits entering industrial fields could not have been too large in view of rapid spread of industrialization in China during these years. Now, during wartime, the Chinese government has been stressing scientific and vocational education in various schools.

MEMO

TO: SHOP FOREMAN

NEW DISCOVERY SPEEDS GEAR LUBRICATION

Gearite -- Union's new grease -- for exposed gears -- is a lubricant in a solvent. When you apply Gearite, the solvent washes away the old deposits of grease and dirt -- evaporates -- and leaves just the right amount of new grease on the gear teeth. Because you don't have to heat it, Gearite makes lubrication simple, quick. You get the right amount in the right place. You don't waste any.

Gearite is far cleaner than most gear lubricants. Because it is applied in a thin layer, it does not collect dirt. It can be applied with either a spray gun or by the drip-feed method to tough lubrication points ordinarily difficult to reach. Furthermore, Gearite will remain on gear surfaces even during long periods of idleness. It is tacky, hence will not throw off.

For further information about Gearite, see your nearest Union Oil representative. He'll gladly give you a demonstration.

UNION OIL COMPANY

INDUSTRY TRENDS AND POINTERS

Coating for Cans

PLASTICS made from petroleum may solve the tin can shortage. At San Francisco last month, it was reported that Shell Chemical Co., unit of Shell Oil Co., was well along with testing a new synthetic substitute for tin as an inside covering for containers for the food industry. This idea apparently has been viewed before but so far no practical plastic substitute for tin would stand up to the 300-degree temperatures needed to cook and preserve food-stuffs. It is claimed that recent testing showed that the new substitute would withstand heat of over 500 degrees.

The coating material as yet lacks a commercial name. Its basis is allyl alcohol derived from petroleum and in the Shell laboratories it is known as "diallylphthalate." So far allyl alcohol has not been produced on a commercial scale. Shell has been producing it as a by-product of earlier process for making synthetic glycerine. Here is the description of the process, as reported last month: The allyl alcohol when combined with a coal tar acid (phthalic acid) which is also made from petroleum, produces the tin coating substance.

With the huge food canning industry of the west confronted with the task of producing more and not knowing where the containers are coming from, they are naturally turning to glass of which apparently there is no lack other than likely from abilities to produce. The claim for the new synthetic coating and its possibilities for the future are obviously of tremendous importance but hardly likely to alleviate the situation confronting canners in the nearby future. Huge demands for glycerine for war needs might conceivably interfere with production of the new synthetic coating described above.

Reclaimed Tin

In the unique position of having the only plant west of the Mississippi river able to extract tin from tin cans, San Francisco last month started its drive for the collection of tin cans from householders. Householders were asked to cooperate by furnishing the tin cans, first crushing them with their feet to make a more compact bundle. Tin can days were designated. Only four other such plants are operated in this country and these in eastern states. At San Francisco the detinning plant is operated by Metal & Thermit Corp. At Los Angeles a similar plant to be operated by the California Detinning Co. is readying for operation.

A ton of tin cans will yield 26 pounds of tin declared equal to the usual Straits

product which is sold for 52 cents per pound, the government ceiling price for tin. Steel scrap from tin cans is baled by hydraulic pressure and sold for \$17 a ton. Truckers who collected the tin cans from San Francisco housewives got \$9.50 per ton and complained they were losing money by the operation.

Looking Ahead

Here is what some representative Pacific coast businessmen expect over the coming six months:

Business is expected to gain 4.2 per cent over the corresponding period of a year ago—April 1 to October 1. This would be a new seasonal high for the coming fall season but would be 7.4 per cent below the six months ended April 1.

Employment will gain only 1 per cent but payrolls will jump 7.2 per cent.

Business leaders are basing their plans on the war lasting about 2½ years more.

Activity would decline only moderately if a favorable peace were suddenly achieved.

A 6.3 per cent rise in general price levels is expected during the coming six months.

For the past seven years, Strassburger & Co., members of the New York and San Francisco Stock Exchanges has been conducting a semi-annual survey of what businessmen expect for the coming six months. Opinions are compiled through questionnaires which go to over a thousand business executives up and down the Pacific coast. Above are the conclusions summarized.

So. American Market

Many manufacturers who owing to a particular type of product manufactured are unable to convert or get into war work are scanning the export market as an outlet, particularly the South American countries. Recently a Los Angeles manufacturer received an order for 3,000 dozen dresses for export to Latin America.

Another example: due to the collapse of German competition, Los Angeles manufacturers of short-wave diathermy equipment now produce 75 per cent of the world supply of these instruments. One plant reports a rapidly increasing export business in these instruments with Latin America.

Max G. Linder, chairman of the 1942 Foreign Trade Week committee of the Los Angeles Chamber of Commerce calls attention to the issuance of a Directory of Buyers for Export in New York by his organization. This directory lists 175 New York buyers engaged in exporting to

foreign countries who have indicated a desire to use the southern California industrial area as a source of supply. Commodities listed include hundreds of different items.

Airplanes

We are heading for larger airplanes than anything ever dreamed of. While the war is on we will probably stick with the present sizes for military uses—it takes time to produce new models and besides the larger type planes already planned do not have high speed necessary for combat purposes.

Last month viewing the future for commercial aircraft Glenn L. Martin, pioneer aircraft designer and producer and president of the Glenn L. Martin Co. made some eye-opening remarks on what he thinks of the future. His company already has plans for a 250,000-pound (125 ton weight) commercial air vessel. Transoceanic air operations are now based on aircraft having a maximum gross air weight of 84,000 pounds carrying 4,000 pounds a distance of up to 3500 miles. The new Martin aircraft would carry a payload of 50,000 pounds—equivalent to 100 passengers and 80 pounds of baggage each, plus 25,000 pounds of mail, cargo and express.

No technical considerations limit the size of airplanes that can be built, Martin asserted; the only limit is the amount of payload available per trip. We should be able to build 500,000 pound airplanes in a very few years.

With the new 250,000 pound flying ship already planned, the ride from New York to London could be quicker than we can ride from New York to Chicago by train. The eastbound transatlantic flight could be made in 13 hours. Owing to wind conditions, it is estimated that the westbound trip would take 19 hours.

NAM Conference

More than 1,000 delegates are expected to attend the northern California regional conference of the National Association of Manufacturers to be held at San Francisco starting May 14. J. D. Zellerbach, regional vice president of the association and president of the Crown Zellerbach Corp., announced.

Nationally known industrial leaders and officials from Washington will take part in the program which will be divided into four separate business sessions at which business men will exchange ideas on how best to speed up production schedules of essential war materials.

LAND-GRANT RATES

By W. C. MITTELBERG

General Freight Agent,
Western Pacific Railroad, San Francisco

IN THESE DAYS of vast troop and property movements for government account, the subject of land-grant rates, under which the government receives certain concessions from the railroads, is frequently a topic of discussion and often not easily understood. The subject is further agitated by HR-6156, a pending bill to amend section 321 of the Transportation Act of 1940, which, in effect, would repeal land-grant rates in their entirety.



Director Eastman, Office of Defense Transportation, recently said that soon land grant rates would be a thing of the past. If the support developing for the Congressional repeal bill is any criterion of the general attitude, there seems little reason to doubt Mr. Eastman's prophecy and one of the oldest bones of contention in the railroad industry will have disappeared into the limbo of the past.

Much of the railroad construction in the west was accomplished with the aid of Federal land-grants and government bond loans, the major portion of the latter having been repaid in the years since. The original lines have in the interim been absorbed or have become component parts of the Santa Fe, Southern Pacific, Union Pacific, Great Northern, Northern Pacific, and Chicago, Milwaukee, St. Paul & Pacific.

Interest in the provision of additional transportation facilities in order to hasten the settlement and economic development of the country, was increasing in the years between 1840 and 1850 and, as the superiority of the steam railways as a means of transportation became apparent, there was a growing demand throughout the nation for the construction of railroads. Unable to secure construction by private capital, some states undertook to build railroads, but their efforts met with little success. Following the collapse of the state ventures, appeals to Congress for land-grants in aid of construction became more insistent, culminating in 1850 with Congressional enactment into law of a bill making land grants to the states of Illinois, Mississippi and Alabama for the construction of what now constitutes a section of the Illinois Central System. The earliest direct grants were those under the Act of July 1, 1862, to the Union Pacific Railroad, Central Pacific Railroad of California, Kansas Pacific Railway, Sioux City and Pacific

Railroad, and the Central Branch Union Pacific Railroad Co., for the purpose of constructing a line from Omaha to San Francisco—and lines intended as connections.

In consideration of the land grants, the railroads involved made concessions in the handling of federal mail, troops, and property, such concessions being based on the varying provisions of the separate grants, resulting in several classifications, such as "reduced rate lines"; "full charge lines"; "free-toll lines"; "Congressional-rate lines"; and "free-grant lines." In the years following, different bases obtained

for these groups in their handling of government troops and property, but, finally, for practical purposes, Congress adopted a series of Acts providing, in effect, that all land-grant railroads transporting troops and property at less than rates charged the general public, by reason of reduced rate provisions of the grant, do so on a 50 per cent basis, instead of the original standard of 66 2/3 per cent.

Non-land-grant railroads, finding themselves unable to participate in such traffic in competition with land-grant roads, eventually entered into agreements with the

(Continued on page 22)



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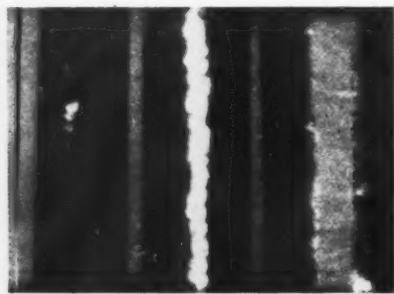
STAUFFER CHEMICAL CO.

X - R A Y . . .

AS THE "all-out" war effort gathers momentum, it becomes increasingly important to utilize every possible means of speeding production and eliminating rejections because of poor material or workmanship. X-ray examination is ideally suited for both these purposes and is being widely adopted by industry*.

A valuable application of X-ray testing utilizes radiography to detect concealed flaws. The first such use was in the examination of castings and forgings intended for use in high pressure systems, where a hidden defect might result in an explosion endangering lives and property.

The aircraft producing units here on the Pacific coast, confronted with the huge task of getting into volume production two years ago, were quick to adopt the X-ray for discovering flaws in parts subjected to stress. Later, War department regulations required X-ray of these parts. Batteries of X-ray machines are used. One southern California aircraft plant has a battery of machines capable of X-raying more than 20,000 parts daily.



• Fig. 1. Three welds were made in rapid sequence, with alteration of conditions. Left weld is inferior; middle job improves and right weld is excellent.

X-ray analysis is used not only for examining complete articles but for the more constructive purpose of discovering better methods of fabrication and production. The rapid development of welding, particularly as applied to high-pressure vessels, has been made possible in large measure by the use of X-ray examination of welds. It is not necessary to examine an entire boiler to determine whether a particular method of welding is suitable. Instead, small samples are made under controlled conditions and these samples are minutely examined by radiography. The welding technique is modified until an acceptable weld is secured, after which the problem is simply one of transferring laboratory conditions to the production line. Figure one (see cut) illustrates this method of examination. The three welds were made in rapid sequence, merely altering the conditions of temperature, welding metal, etc., and all three were examined later. It is obvious that the weld on the left is in-

ferior, the middle one is improved; and the one on the right is excellent.

This method of testing has made it possible to develop a technique giving highly satisfactory spot-welds on very thin aluminum sheets such as those used in airplane manufacture. The radiographs are



• Fig. 2. X-ray photo of aluminum casting intended for use in an airplane. Casting is obviously porous and will be rejected.

examined with a magnifying glass or microscope. On the basis of such tests, welding is rapidly replacing riveting in the airplane industry, just as it replaced riveting in the boiler industry more than a decade ago.

Figure two illustrates an aluminum casting intended for use in an airplane. This casting is obviously porous, although it presented a very smooth exterior surface. It contains internal defects which unquestionably could not stand up under the tremendous hammering and vibration to which it would have been subjected in use. Failure of such parts in time of combat might well be the turning point in an engagement—might result in loss of plane and pilot, neither of which can be spared or replaced.

There is a third type of X-ray equipment especially suitable for use on aluminum and thin parts. It consists essentially of the control unit and transformer unit with the small X-ray tube mounted on top of the transformer container. The equipment is completely shockproof and in the hands of the average laboratory employee, yields films which may be readily diagnosed.

World War I compelled industry to call on chemistry for new methods of speeding production and eliminating waste of materials. World War II has caused a similar call on X-ray analysis to improve quality and eliminate waste of man-hours and machine-hours. Those industries having problems which have not yet been solved by conventional methods should explore the possibility of applying X-ray examination or analysis to them.

*These highlights on the increasing use of X-raying were furnished by R. T. Foreman, of the Kelley-Koett Manufacturing Co., of Covington, Ky.

LAND-GRANT RATES

(Continued from Page 21)

government services under which they agreed to meet the rates of the land-grant roads, so that, today, practically all railroads west of Buffalo are parties to rate-equalization agreements covering the movement of government property.

In 1941, applicability of land-grant rates was eliminated from all government traffic, with the exception of that moving solely for military purposes. However, since we became embroiled in the present world conflict early in December of last year, the volume of government traffic, moving for military purposes, has increased tremendously until it is quite probable that such traffic handled by western transcontinental railroads constitutes from one-third to one-half of their total transcontinental traffic. It is important to note, in this connection, that very few lines east of Chicago are now land-grant roads, which, of course, means that government transcontinental traffic from that territory is not carried all the way on a 50 per cent basis. The Pere Marquette line in Northern Michigan, however, is a land-grant road and since it, in connection with a car ferry to Manitowoc constitutes a transcontinental route, it contributes to the total deduction under the commercial rates that apply to transcontinental traffic.

On the total government traffic handled throughout the country the land-grant concessions will average roughly about 35 per cent. On traffic moving between the Pacific Northwest and California the government receives concessions somewhat in excess of 35 per cent, depending upon the mileage involved over which the land-grant privilege applies.

There is one compensating factor under the present abnormal conditions as compared with conditions which ordinarily exist. It is that in the current heavy volume of government traffic there is a fairly high proportion of high-class traffic subject to rates above the normal average, which, after the land-grant deductions are made, results in fairly satisfactory car earnings, and this contributes toward placing the entire traffic, on the average, on a more attractive basis than ordinarily would be the case.

An expert's statement a few days ago that from figures obtainable land-grant rates represent a reduction to the government of about 12 per cent under corresponding commercial rates on materials and troops was undoubtedly based on a nationwide study and resulted from a large tonnage moving over railroads in the east, where the land-grant mileage is small, with a lighter movement over western railroads, where the concessions are on a considerably higher level than in the east.

WESTERN INDUSTRY—May, 1942

VIEWPOINT

Readers are invited to give their views and exchange ideas through the medium of the editorial columns of Western Industry. Additional information relating to subjects of articles can be obtained by writing the Editor, using business letterhead if feasible.

Dear Sir: Your letter of April 6, 1942, forwarding for my attention a copy of the April issue of *Western Industry* inviting attention to certain editorial material relative to the "Reber plan" for San Francisco Bay, is noted. While this plan has been presented to different Commandants for some years past, the placing of the Mare Island Navy Yard and Hunter's Point Dry Docks behind ship locks raises an immediate objection upon the part of the Navy to any scheme of this character. The Commandant can see no military advantages arising from it, and believes that the project would be detrimental to the development of the harbor, in its essential features. The plan hinges primarily upon the so-called "salt water barrier" idea which was fully investigated by the Corps of Engineers of the U. S. Army, and is referred to in the reports from the Chief of Engineers contained in House Document No. 791, 71st Congress, 3d session, and House Document No. 191, 73d Congress, 2d session, entitled "Partial Report on Sacramento, San Joaquin and Kern Rivers, Calif."—J. S. Greenslade, Rear Admiral, U. S. Navy Commandant, Twelfth Naval District, San Francisco.

Dear Sir: We note in the magazine *Western Industry* your topic on how small business must convert to war production. We have tried for approximately nine months to have someone of the armed forces come and make a survey of our plant.

We manufacture all sorts of wire articles and sheet metal articles, and to date, we have had about four weeks work for two or three men in National Defense. We want to help, but so far we have gotten nowhere. What would you suggest we do? We feel that there should be something we can do to keep our business going. We employ between 25 and 35 men regularly.—Ludomil S. Ondrasik, Treas., Wire Products Corporation, Los Angeles.

Dear Sir: Your letter of April 6 with the enclosed copy of the current issue of *Western Industry* discussing the Reber Plan has just been received. I wish to thank you very kindly for your courtesy, and as this is the first copy of your publication I

have had the pleasure of seeing, I wish to congratulate you upon the general excellent get-up of this publication. Again thanking you. Walter J. Walsh, president, Army and Navy Club, San Francisco, Calif.

Dear Sir: Regarding "Yours for the Asking" in *Western Industry* for April, 1942, we wish to advise that we would be pleased to receive additional data concerning items No. 1045, 1048, 1050, and 1052. Thanking you kindly for this splendid service. Wilford R. Penny, Cederquist Show Case & Cabinet Co., Los Angeles, Calif.

Dear Sir: Thank you for your April issue. It's really the best issue we ever read—even

took it home and the family read it, too. Lots of good pictures. Put Larry O. Johnson in place of H. W. Bogie as manager of our Contract Distribution Branch—page 26. E. G. Harlan, Manager, Boise Chamber of Commerce, Boise, Idaho.

Dear Sir: Many thanks for the April issue of the "Western Industry" Journal and the reference to the San Francisco Bay Project. I want you to know that I appreciate the interest you have taken in this matter, and hasten to assure you I am doing everything in my power to forward this plan for the benefit of all San Francisco. With kind regards, I remain, Chester R. MacPhee, Supervisor, City and County of San Francisco.



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A NAIL, A
KINGDOM WAS LOST!**

PARTS TAG

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Part No. _____

No. of Pcs. _____

Comp. No. _____

Item No. _____

Model _____

Date Shipped _____

Manufactured by _____

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A TAG
A PART WAS LOST!**



**THAT LOST PART COULD MEAN A DELAYED
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PROTECTION

SAN FRANCISCANS have taken their instructions for protection against bombing in the event of an air raid seriously, probably more seriously than the average Pacific coast community with the possible exception of Seattle. All large cities have designated air raid shelters but many San Francisco merchants have gone a step further by reinforcing plate glass windows with acetate fibre tape, the ordinary "scotch tape" used in business offices.

Just how effective this would prove in the event of an air raid remains to be seen but merchants have taken a lesson from London in its experiences with bombing raids. Liberal pasting of this adhesive tape is expected to retard pulverizing and shattering of plate glass windows. Breathing pulverized glass is deadly. In London it was found that large chunks of glass flying through the air during bomb raids killed many people. They were projected through the air with speed to force them through board fences. The U. S. Army remains non-committal on the effectiveness of the taping process.



• (Above) Artistic application of the use of acetate fibre tape applied to windows for protection against flying glass. Here is a show window of I. Magnin & Co., San Francisco, western retail merchandiser. Design was hand-cut from broad strips of tape. At left is an entrance for purchase of War Bonds. (Below) Usual method of application of tape to large windows.

KRUCKMAN'S VIEWS

(Continued from Page 10)

and allied products which were made of metal secured without benefit of priorities. They will tell you that such supplies are available in some instances while smaller contractors with A-10 or even A-5 priorities have difficulty in securing metal.

The classic incident now going the rounds here at the moment concerns a great building block, the size of a city square, in a bustling city of a Southwestern State. The sponsor, a great power in the State, and a great and powerful influence here in the Capital, is reported to have requested a high priority to secure copper and steel. The priority was not issued immediately. The sponsor apparently was not able to secure supplies of copper; but he was able to get enough material to run up all the structural steel required in the vast building. And he got it without benefit of priorities.

JAP EVACUATION

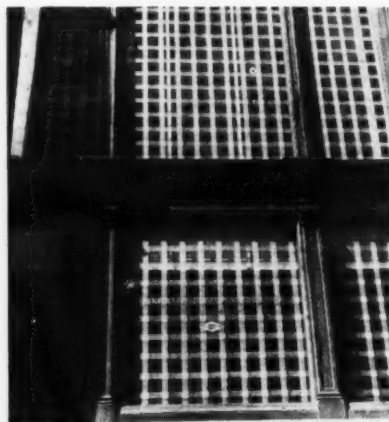
(Continued from Page 13)

care of: Where they will finally land, they do not know but it will be in a good spot with excellent food and quarters.

JAPANESE POPULATION—PACIFIC COAST STATES*

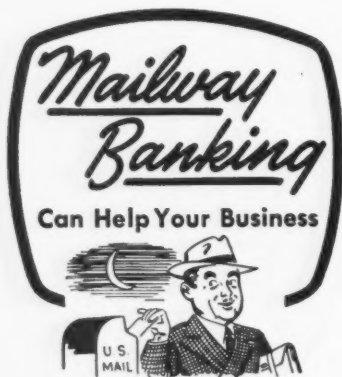
	1880	1890	1900	1910	1920	1930	1940
California	86	1,147	10,151	41,356	71,952	97,456	93,717
Washington	1	360	5,617	12,929	17,387	17,837	14,565
Oregon	2	25	2,501	3,418	4,151	4,958	4,071
Pacific Coast States....	89	1,532	18,269	57,703	93,490	120,251	112,353

*U. S. Census Bureau.



Aluminum

Large aluminum forgings, vastly larger than any made hitherto, are one of the many advances to come out of our war effort. Big hammers and presses installed for military production are making big parts, comparable in size to bus and truck side frames, front axles, wheel centers and other large pieces never attempted before. Strong, light aluminum alloy forgings will come into their own after the war, according to Aluminum Company of America.



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BUSINESS BOOKS

Publicity, How to Plan, Produce and Place It. This readable book on the value of publicity should be an eye-opener for the vast majority of us who have not the slightest idea of how constructive publicity is planned and effected. The author has had many years of experience in this field and has the know-how. He is the publicity director of the Los Angeles Chamber of Commerce and chairman of



Chamber of Commerce and chairman of

CALENDAR OF EVENTS

- May 1—COLORADO MINERAL SOCIETY. State convention in Denver, Colo.
- May 1-3—JUNIOR CHAMBER OF COMMERCE. State conference in Portland, Ore.
- May 8—NORTHWEST DRIED FRUIT ASSN.. Regional conference in Portland, Ore.
- May 8-9—CALIFORNIA RETAIL FUEL DEALERS ASSN.. Regional convention in San Jose, Calif.
- May 14-16—AMERICAN TRUCKING ASSN.. Eleven Western States Conference, Olympic Hotel in Seattle, Wash.
- May 17-21—NATIONAL RETAIL CREDIT ASSN.. Northwest conference, Olympic Hotel in Seattle, Wash.
- May 18—CALIFORNIA ASSN. OF COMMUNITY SAFETY ORGANIZATIONS. State convention in Oakland, Calif.
- May 19-20—NAT'L METAL TRADES ASSOCIATION. The Biltmore Hotel in New York City
- May 19-21—WESTERN TRAFFIC CONFERENCE in San Francisco.
- May 21-22—PACIFIC COAST ELECTRICAL ASSN.. Regional convention in San Francisco.
- May 21-22—PACIFIC COAST GAS ASSOCIATION. Conference at Ambassador Hotel in Los Angeles, Calif.
- May 22—OREGON FEED DEALERS ASSN.. State convention in Portland, Ore.
- May 23-24—BOND TRADERS ASSN.. Hotel del Coronado, San Diego, Calif.
- May 24-27—CALIFORNIA SHOE RETAILERS ASSN.. State conference, St. Francis Hotel in San Francisco.
- May 27-29—PACIFIC COAST ACCOUNTING CONFERENCE in Portland, Ore.
- May 30-June 2—PACIFIC NORTHWEST SHOE RETAILERS & WESTERN SHOE TRAVELERS in Portland, Ore.

the publicity committee of the Pacific Advertisers Association. Every step in the production of publicity, from research to making lists and to formation of committees and placing the material in the right spots is outlined by the author. *Publicity: How to Plan, Produce and Place It*, by Herbert W. Baus. Price \$3.00. Published by Harper & Brothers, 49 East 33rd Street, New York City.

Simple Blue Print Reading with Special Reference to Welding, second edition. This book is concisely written in simple, practical language for easy understanding. It is intended that welders, mechanics and others will be enabled by utilization of spare time study, to learn print reading which otherwise might take months of intensive study. More than 50 drawings have been revised in the new edition of this volume which is designed to aid anyone who reads blueprints, although the book has been published especially for those in the welding field. Semi-flexible simulated leather cover, 146 pages with 96 drawings. Price 50 cents in the United States, 75 cents elsewhere. Published by The Lincoln Electric Co., 12818 Coit Road, Cleveland, Ohio.

Shipfitter's Manual, by Albert F. Crivelli, was produced primarily for the benefit of student shipfitters who at the very outset of their training period realize a need for some suitable guide in their study of the trade. Its purpose is to provide the groundwork upon which a student may build for himself a complete and thorough knowledge of shipfitting by practical application of book knowledge. Price \$1.50, cloth bound. Published by Pitman Publishing Corp., 2 West 45th St., New York.

Keys to Business Cash by William Hurd Hillyer is helpful in revealing the different sources available to the small businessman for financing expansion and new ventures, and the opportunities offered for quick and economical methods. This book is addressed especially to owners of independent businesses handling a yearly volume of less than two million dollars. Cloth bound. Price \$1.00, published by Harper & Brothers, 49 East 33rd St., New York, New York.

TechniData Handbook, by Edward Lupton Page, was prepared because the author, when a student, found himself carrying too many books and spending too much time looking through them for information. This book has been written for all who want to augment their knowledge of mathematics, physics, chemistry, mechanics or engineering. The information is fundamental and will not go out of date. Spiral binding, \$1.00; cloth binding, \$1.50. Published by The Norman W. Henley Publishing Co., 17 West 45th St., New York.

PRODUCTION PLAN

Here is an actual case history of how one American manufacturing concern, faced with the loss of more than half of its business, planned and executed a plan to obtain prime contracts and sub-contracts, in order to keep the business going. The manufacturer involved in this case study was prevailed upon by business associates to publish this plan as a guide for other manufacturers.



The book is a step-by-step treatment of how this company set about to regain lost production—replacing former peace time products with war products.

A copy of this book may be obtained at no charge by writing on your business stationery to Lyon Metal Products, Incorporated, 3127 Clark Street, Aurora, Illinois, and asking for the book "How One Company Tackles the War Production Problem."

PROFIT CONTINUANCE PLAN

Today's helpful advertising builds firm friendships among customers and prospects that will strengthen farsighted firms to meet coming competition. And the right kind of advertising helps war production right now by transmitting useful information to users.

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FEDERAL DEFENSE AGENCIES

For quick reference, below are listed principal defense agency offices established in the western states which are open for consultation with business and industry:

War Production Board Division of Industrial Operations (Priorities)

SAN FRANCISCO: James A. Folger, district manager; Gilbert Kneiss, assistant, 1355 Market St.

OAKLAND: H. H. Daley, manager, Financial Center Building.

LOS ANGELES: A. L. Thomas, manager, 1031 So. Broadway.

SEATTLE: William M. Shannon, district manager, 226 Henry Building.

PORTLAND: J. Fred Bergesch, district manager, 806 Bedell Building.

PHOENIX: Lee G. Browne, manager, 408 Security Building.

Production Division Contract Distribution Branch

SAN FRANCISCO: Colonel F. M. Smith, state director; E. F. Halloran, assistant, 1355 Market St.

LOS ANGELES: Watt L. Moreland, district manager, Western Pacific Building, 1031 So. Broadway.

SEATTLE: Harry J. Martin, state director, 3314 White Building.

PORTLAND: John G. Barnett, state director, 815 Bedell Building.

FRESNO: Herman A. Mattern, district manager, Mattei Building.

OAKLAND: W. P. Collins, district manager, Financial Center Building.

SACRAMENTO: Orlando McCraney, district manager, Farmers and Mechanics Building.

SAN DIEGO: Paul C. Farmer, district manager, Union Building.

PHOENIX: William Walsh, state director, 406 Security Building.

BOISE: Larry O. Johnson, acting manager, 409 Capital Securities Building.

RENO: E. S. Bender, acting state director, Saviers Building.

HELENA: Howard Bogie, state director, 222 Power Block Annex.

Division of Information—OEM

SAN FRANCISCO: Dean S. Jennings, regional information officer; Harry E. Flanagan, assistant, 1355 Market Street.

LOS ANGELES: H. R. Washburne, branch manager, 1031 South Broadway.

SEATTLE: Howard MacGowan, branch manager, 234 Henry Building.

Central Administrative Services—OEM

SAN FRANCISCO: Ralph B. Thompson, regional manager; L. F. Gentner, regional service operations officer; L. W. Scott, regional fiscal officer; Boynton S. Kaiser, regional personnel officer; John R. Kalberg, district manager, 1355 Market Street.

LOS ANGELES: Thomas Osborne, district manager, 1031 So. Broadway.

SEATTLE: John DeMun, district manager, 957 Stuart Building.

PORTLAND: Donald Parker, administrative service officer, 815 Bedell Building.

National Housing Agency—OEM

SAN FRANCISCO: O. W. Campbell, Raymond Brummet, Carl W. Smith, W. C. McKelvey, 1355 Market Street.

LOS ANGELES: Kelvin Vanderlip, Frederick C. Haek, Jr., John W. Robertson, William H. Taylor, 1031 So. Broadway.

SEATTLE: Louis Scarbrough, Bert Edwards, Carl Dumbolton, Room 204, White Building.

Division of Labor Labor Supply Branch

SAN FRANCISCO: James G. Bryant, chairman of the Regional Labor Supply Committee; George W. Davis, executive officer of Northern California Industrial Area Committee; Lee R. Smith, regional labor representative, Labor Supply Committee, Humboldt Bank Building, 785 Market Street.

LOS ANGELES: H. R. Harnish, executive officer of Southern California Industrial Area Committee, 1031 So. Broadway.

WASHINGTON and OREGON: James E. Carroll, executive officer of the Industrial Area Committee, 202 Old Post Office, Portland, Ore.

Division of Training—Within-Industry

SAN FRANCISCO: Alexander Heron, district representative, 260 California Street.

LOS ANGELES: William K. Hopkins, district representative, Roosevelt Building.

SEATTLE: General H. G. Winsor, district representative, Stuart Building.

PORTLAND: Laurin E. Hinman, representative, Public Service Building.

Labor Relations Branch

SAN FRANCISCO: Charles Gillis, labor relations assistant, 2626 Ocean Drive; Mrs. Nathalie Panek, labor relations assistant, 785 Market Street.

LOS ANGELES: George Roberts, labor relations assistant, 1031 So. Broadway.

FRESNO: Joseph Creem, labor relations assistant, 130 North Fresno Street.

Office of Price Administration

SAN FRANCISCO: Harry F. Camp, regional director; Frank E. Marsh, executive officer; Ben S. Duniway, regional attorney; Thomas W. Sullivan, regional inspector; Norman S. Buchanan, regional price executive; Leigh Athern, rationing attorney; Brownie Lee Jones, consumer division, 1355 Market Street.

LOS ANGELES: Neil Petree, manager, 1031 So. Broadway.

SEATTLE: Henry Barlow Owen, manager; Beryl S. Gridley, consumer division, Stuart Building.

PORTLAND: R. G. Montgomery, manager; Nan Wood Honeyman, consumer division, Bedell Building.

Office of Defense Transportation

SAN FRANCISCO: W. B. Grummel, district manager, Monadnock Building.

LOS ANGELES: W. E. Sherrard, acting district manager, 1031 South Broadway.

PHOENIX: W. N. Cox, district manager, 125 North Second Avenue.

Division of Railway Transport

SAN FRANCISCO: J. M. Baths, deputy director, 1355 Market Street.

War-time Civil Control Administration

SAN FRANCISCO: Lt. General J. L. DeWitt, Chief of Staff; Col. K. R. Bendetsen, asst. Chief of Staff; Lt. Col. M. F. Haas, deputy assistant Chief of Staff; Lt. Col. I. K. Evans, deputy assistant Chief of Staff; Capt. A. H. Moffitt, Jr., executive officer, Hotel Whitcomb.

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and

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INCORPORATED

PORTLAND

OREGON

LABOR—FROM LEFT TO RIGHT

IN THE second decision of this nature in California, a jury in the state Superior Court last month returned a verdict awarding \$30,000 damages for libel and slander in a suit brought by the B/G Foods, Inc. operating a restaurant chain, against the local Joint Board of AFL Culinary Workers, five affiliated unions and officials of each of these unions. Union spokesmen at San Francisco immediately said that the suit would be carried to a higher court.

A recent verdict in Stockton, Calif. awarded damages against the Teamsters Union there establishing a precedent. Obviously if these damage awards are upheld by the higher courts, they are of tremendous importance to employers as affording some measure of protection against union activities seeking to damage an employer where ordinary strike measures fail.

Many other suits have already been filed against unions within the state. Gantner & Mattern Co., San Francisco manufacturers of knitted wear has on file a suit seeking \$1,750,000 damages against the International Ladies Garment Workers Union alleging slander and false statement which have affected national sale of products.

Meanwhile, the B/G sandwich shops continued to be picketed and soon will round almost a year of continuous picketing. Damages were granted on the allegation of slander regarding cleanliness of restaurant kitchens and quality of food.

"Hot Cargo"

The "Hot-cargo" bill passed at the 1941 session of the California state legislature over the Governor's veto has failed to become law and is now subject to a referendum at the coming November elections. Those elements in labor circles which successfully canvassed for enough names to the petition for referendum are planning to swing into high gear soon in an attempt to abolish this law permanently.

The anti-hot-cargo fight will obviously be tied in with the coming gubernatorial campaign set for the November elections inasmuch as Governor Culbert L. Olson, likely candidate for reelection vetoed the bill which was subsequently passed over his veto.

The "Hot-cargo" bill provides for outlawing hot cargo practices and the secondary boycott. Hot cargo is the name given to goods or merchandise which an employee refuses to handle because such goods have been created or handled at a place where a labor dispute exists between an employer and employees. The secondary boycott is an extension of union activities to boycott a non-related business which handles goods

produced in a plant where a dispute exists.

From a legal standpoint, the United States Supreme Court in March handed down a decision — Carpenters' Joiners' Union of America versus Ritter's Cafe (Texas)—which upheld states' rights in enacting legislation against application of secondary boycotts.

Staggered Hours

Los Angeles is the first major city outside of Washington, D.C. to adopt a staggered work hours program which is now working very successfully. This plan, based on detailed studies by competent traffic engineers, has been adopted by the Los Angeles city and county Defense Councils. It is now confined to the downtown business area but will soon be extended.

Advantages claimed are: 1) ability to move increasing numbers of street car and bus passengers and to care for defense traffic; 2) speeding up of car and bus movements with faster service; and 3) the ability of traction and bus companies to more fully utilize existing equipment.

In operation, the plan segregates three classes of employees in the business district—government employees, office and loft building employees and retail store personnel. Government employees start work at 7:30 to 7:45 AM and quit at 4:00 to 4:15 PM. Office and loft employees are divided into three groups according to geographic location and start work from 8:00

to 8:30 AM, quitting from 4:30 to 5:00 PM. Retail store personnel starts work at 10:00 AM and quits at 6:00 PM.

Employing Women

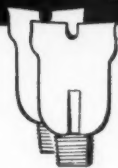
Pacific coast aircraft plants took the lead in employing women in their plants to release men for more important jobs. This all started last summer. Since the number has been increasing steadily. But this is only the beginning. It is estimated that a third of all jobs in aircraft plants could be filled satisfactorily by women.

Result of a survey by the Labor division, WPB, here are some of the jobs which it is indicated could be filled by women. The survey has its implications for many other lines of industry which do machine and bench work:

As machine operators they could be responsible for—drilling, reaming, counter sinking on single, multiple and pneumatic drills; small milling machines; small turret lathes; small and medium sized punch presses; single angle bending machines and brakes; light grinders; riveting and dimpling machines; and spot welding.

In bench work, they could be responsible for—burring and filing of all kinds; soldering; hand forming over templates and blocks; tube cutting, bending and assembly; electrical assemblies; wiring and bending; and sub-assemblies in jigs and at benches.

from FISHTAIL BITS to PARACHUTE BUCKLES



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WESTERNERS AT WORK



NEIL PETREE
Los Angeles OPA Head

WELL-KNOWN business men have been appointed to head the newly opened units for the Office of Price Administration at both Los Angeles and Portland, Ore. The announcement of the new offices was made by **Harry Camp**, regional OPA director at San Francisco in April who said that they "would be staffed with

specialists equipped to render assistance to business groups and consumers with inspectors to develop necessary information as a basis for an adequate system of price administration. *Its personnel will be familiar with local conditions.*"

At Los Angeles, **Neil Petree**, president of **Barker Brothers** furniture manufacturers and retailers, was named manager of the local OPA branch. He will continue as president of Barker Brothers but resigned two civic jobs, feeling that he could not give them adequate attention—a vice presidency of the Chamber of Commerce and presidency of the Down Town Business Men's Association. **Frank P. Doherty**, prominent attorney, was elected to fill Petree's place as vice president of the Chamber.

Richard G. Montgomery, well-known retail executive, was named as regional manager for the Portland OPA offices. He has been treasurer and manager of the retail division of **J. K. Gill Co.** of Portland. A native Oregonian, Montgomery was one of the founders of the Portland Retail Trade Bureau and was vice chairman of the old NRA. He is a member of the board of directors of the Oregon Institute of Technology. Serving as chairman of Selective Service Board No. 1, he resigned on taking up OPA activities.

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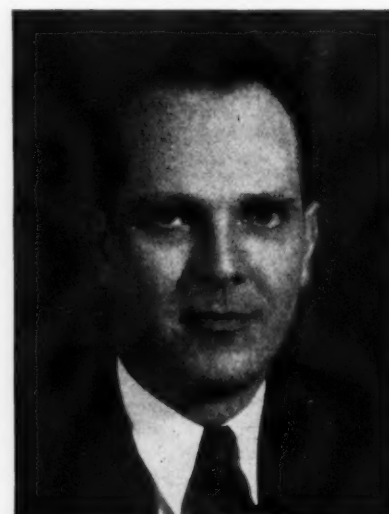
RAPIDLY expanding business has necessitated many personnel changes within the organization of Owens-Illinois Pacific Coast Co. Announced last month by **H. S. Wade**, president, was the appointment of **L. R. Kessler** as manager of the company's Oakland factory while **S. M. Cantrill** has been assigned to a corresponding post at Los Angeles.



S. M. CANTRILL
Returns to Los Angeles

Kessler comes to the Pacific coast from Toledo where he held the post of eastern factories manager, glass container division, of Owens-Illinois Glass Co. In returning to Los Angeles as plant manager, Cantrill is assuming duties which he left a year ago when he was transferred to Oakland.

L. R. KESSLER
Heads Oakland Branch



Columbia Steel Co., subsidiary of United States Steel Corp. at San Francisco, has announced the appointment of **W. S. Worthington** to the position of assistant vice president of operations. Worthington was formerly general superintendent of the Pittsburg, California, works.

Other appointments announced were: **Joseph A. White**, former assistant general superintendent, to the position of general superintendent, Pittsburg works; **J. D. McCall**, former assistant general superintendent of Torrance, California, works to assistant general superintendent of Pittsburg works, and **Harlow Dotson**, former assistant works engineer of Torrance, to assistant general superintendent, Torrance works.

Robert W. Cross and **Walter H. Rolapp** have been elected vice presidents of the Pacific Mutual Life Insurance Co. at Los Angeles.

Cross has been with Pacific Mutual since 1934 in charge of securities investments. He was formerly Pacific coast representative of the National City Bank of New York and is a director of the Yosemite Park & Curry Co.

Continued on page 34

WESTERN INDUSTRY—May, 1942

GROWING PAINS

SOUTHERN STEEL PLANT

SOON the quietude of the vineyards of the prolific wine-producing plains just west of San Bernardino in southern California will be replaced by the noisy din of steel-making plants which are already under construction. The dusty plains up to now have been used largely for grape cultivation and for raising hogs on huge hog ranches. Here already is located the largest vineyard in the world alongside of which will now operate one of the largest industrial efforts of the southland.

Construction began April 5 at the \$48,700,000 steel plant on the plains "somewhere near Fontana, Calif.," by the Henry J. Kaiser Co. in cooperation with the Defense Plant Corp. and other government agencies. Significant feature to the erection of a fully integrated steel plant here is the plan to utilize iron ore from the adjacent San Bernardino mountains while coking coal is to be brought from Sunnyside, Utah.

Hitherto, the only major source of usable iron ore here in the west has been at Iron Mountain, Utah and it is utilized for iron and steel manufacture at the Columbia Steel Co. mills at Provo.

Site of the steel mill is already a beehive of activity with the first of the temporary construction buildings completed and surveys already under way for the location of permanent buildings. Replacing the vineyards, hog-yards and cow barns which covered much of the 1200 acre site, plans call for the erection of a fully integrated steel plant—a complete iron and steel operation with ore storage, blast furnaces, plate mill, and foundries.

First immediate effect upon localities of the region is the cry of impending housing shortage in nearby Ontario, officials of that city having already met with Defense Housing Administration representatives in Los Angeles to have the Ontario region reinstated as a "critical defense housing zone."

As security for an RFC loan to the Kaiser interests for the \$48,700,000, a mortgage on the steel mill property and projected buildings and improvements was recorded in San Bernardino April 4. The instrument insures payment on a note, which the company is to pay off at the rate of \$200,000 monthly, beginning January 1, 1944. It carries an interest charge of 4 per cent.

An emergency permit has been granted the Santa Fe railroad, by the San Bernardino County Board of Supervisors, for the construction of tracks to the plant site. Closing of roads within the site is provided for within the two mile square site.

Colorful San Franciscan Henry J. Kaiser quite apparently is in another major project here on the Pacific coast. Aside from the \$12,000,000 magnesium plant which he is operating for the government at Permanente, Calif., he also operates huge ship producing yards at Richmond, Calif. and Portland, Ore.

Alaska Highway

Start of construction of the remaining untraveled spots in Canadian territory to make the projected highway from this country to Alaskan points an actuality looms in the immediate future. Owing to war needs, the details on the project have been guarded secrets. Obviously, the impetus which put the highway project over is the need for transport of huge amounts of materials and supplies now going to Alaskan points. In peace time, such a highway will be of great importance in opening up Alaska; particularly important to our northwest states and western Canada and to a lesser extent to adjoining states.

Announcement was made last month by the United States Department of State to the effect that an agreement had been reached between the governments of the United States and Canada for the construction of a highway to Alaska. The proposed route will utilize existing roads from northern Montana through Calgary and Edmonton in the Province of Alberta to

Fort St. John in eastern British Columbia. From there a new road will have to be constructed through virgin country of British Columbia and Yukon in the interior of Alaska.

Engineer troops of the U. S. Army have been in northern Canada since early in March and are building pioneer roads under the direction of Brig. Gen. William M. Hoge with the cooperation of Arthur Dixon, chief engineer of the Department of British Columbia.

The project is said to involve construction of about 1,000 miles of new highway and the rehabilitation of some 400 miles of existing highways. The total estimated cost of the completed job has been placed at \$50,000,000 for a gravel surfaced highway. Congress has before it a bill which would appropriate \$25,000,000 for this project.

Newport, Cal. Shipyard

Augmenting the huge steel shipbuilding program in southern California, Newport harbor just south of Long Beach, Calif. should soon be in the production of wooden ships. Standard Shipbuilding Corp. has selected Newport to construct a yard and ways on a 1200 acre site sufficient to construct wooden ships up to 260 feet in length. This area will provide room for the construction of nine ways with outfitting docks to produce wooden

• Construction of first buildings on the 1200-acre site for new steel plant was started last month by the Kaiser Co., Inc. which will operate the plant. Pouring of concrete for administration buildings in former walnut grove near Fontana, Calif. (Exclusive photo—Pat Dowling Pictures.)



OPPORTUNITY SECTION . . .

Priorities regulations have made it practically impossible to secure new machinery for industrial operations unless a plant is doing 100 per cent work on war projects. Even then, long delays are in prospect. The government is urging full use of existing machinery. Listed here are "machinery opportunities" immediately available here on the Pacific Coast. Recently, used machine tools were made subject to priorities, but this does not apply to other classifications of machinery.

MACHINERY SALE MOTORS

- 1—260 H.P. Synchronous G.E. 225 RPM, 2200 volts, 210 KVA.
- 2—250 H.P. Westinghouse, Type CS, 290 RPM, 2200 volts.
- 1—200 H.P. G.E. Type I, 600 RPM, 440 volts.
- 1—200 H.P., G.E. 1800 RPM, 440 volt motor.
- 1—150 H.P. Westinghouse, Type CS, 1800 RPM, 440 volts.
- 1—150 H.P. Type B.F.M. 720 RPM, 440 volts.
- 1—150 H.P. Westinghouse, Type CS, 900 RPM, 2200 volts.
- 1—150 H.P. G.E. Type I, 720 RPM, 440 volts.
- 1—100 H.P., Slip Ring, G.E., 720 RPM, 440 volts.
- 1—75 H.P. Crocker Wheeler, 900 RPM, 440 volts.
- 1—62½-Ft. 23½-inch Double Leather Belt.
- 1—50 H.P. Westinghouse, 900 RPM, 440 volts.
- 1—50 H.P. Vertical Fairbanks Morse, 1200 RPM, 220 volts, solid shaft.
- 1—35 H.P. Crocker Wheeler, 1200 RPM, 220 volts.

GENERATORS, BLOWERS, WATER PUMPS

- 1—1500 Watt, Direct Current, 110 volt, Kohler automatic light plant.
- 1—300 H.P. Triumph Water Wheel with governor, 50 ft. head.
- 1—300 K.W. Westinghouse A.C. Generator, 900 RPM, 440 volts, 3 phase.
- 1—No. 70 ILG Blower, 17,430 CFM, direct to 6 H.P. 340 RPM, 3 phase motor.
- 3—75 KVA Transformers, Wagner Type HE, 6600 to 220/440/ volts, 60 cycle.
- 2—75 KVA Transformers, G.E. Type H, 6600 to 120/240/480 volts, 60 cycle.
- 1—60 H.P. Byron Jackson Turbine pump, 1200 GPM at 140 ft. head.
- 1—50 H.P. Single Drum Mine Hoist.
- 1—20-inch Krogh Split Case Pump, 11,000 GPM at 26-ft. head.
- 1—5 KVA, 110/220 volt Alternating Current Kohler automatic light plant.

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50 HP, 900 RPM Type MT General Electric
75 HP, 900 RPM Type HV F. M. Ball Bearing

MULTI-SPEED MOTORS
7½/15 HP 4/8 pole Type QSX Fairbanks Morse
30 HP—6/8/12/16 pole Constant HP West.

TWO POLE MOTORS—BALL BEARING
50 HP—3600 RPM, Type HO Fairbanks Morse
60 HP—3600 RPM, Type FT General Electric
75 HP—3600 RPM, Type SK Howell
100 HP—3600 RPM, Type SC Howell

2200 VOLT
150 HP 1200 RPM Type I—double extended shaft—G.E.

DC MOTORS
3—1½ HP 115 Volt 1750 RPM Shunt wound
7—2 HP 115 Volt 1750 RPM Shunt wound
1—20 HP 230 Volt 800 RPM Type DLC G. E.
Rewinding 2655 Santa Fe Avenue Repairing
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- 4—5 K. V. A. Westinghouse
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- 1—7½ K. V. A. Westinghouse
- 1—15 K. V. A. Westinghouse
- 3—10 K. V. A. General Electric

Single Phase, 50 or 60 Cycle 440 to 220/110 Volts

- 4—1½ K. V. A. Westinghouse
- 8—3 K. V. A. Westinghouse
- 12—5 K. V. A. Westinghouse
- 4—7½ K. V. A. Westinghouse
- 3—10 K. V. A. Westinghouse
- 1—37½ K. V. A. Westinghouse

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vessels in volume. It is expected that upwards of 3000 will be employed, according to Walter H. Walker, vice president of the Standard Shipbuilding Corp.

Berkeley, Calif.'s newest contribution to the Nation's war effort is the \$750,000 industrial expansion project at the Automatic Machine Tool Co.'s plant which is expected to be completed in June. Although less than 18 months old, this machine tool plant is geared to mass production and is maintaining full-stride activity during the expansion, Wallace Johnson, general manager, reported in April. When in full operation, the enlarged plant will employ approximately 450 trained machine tool operators, practically doubling the present payroll.

Continued on page 32

NEW RAILWAY CAR

Continued from page 17

body toward the outside of the curve. The causes of these discomforts are basic in conventional car construction.

With present equipment, any attempt to push trains to greater speeds must result in either decreased passenger comfort or expensive roadbed redesign and realignment. A desire to combine high strength and rigidity with minimum weight led to the adoption of a "stressed-skin" car-body structure.

Describing the new principle, George E. Solnar, project engineer for Pacific Railway Equipment Co., says:

The pendulum suspension and stressed-skin body structure described here are the results of our study. The stable equilibrium

is established by placing the banking axis, or center of rotation, above the center of gravity of the car body. This banking axis is established by lateral springs and positioning arms. The lateral springs cushion the lateral movement of the whole body. The action of the pendulum suspension is compared with the conventional system in Fig. 2. When the car body with stable pendulum suspension is subjected to displacement by a lateral force equal to that imposed on a conventional car, the body gravity force creates a restoring moment rather than a displacing moment. The uncomfortable body roll, caused by improper curve superelevation, is thus corrected, lateral lurches are softened by lateral springs, and softer vertical body springs, providing a more complete body isolation from truck vibrations, may be used without fear of excessive body roll.

THE SHOWCASE

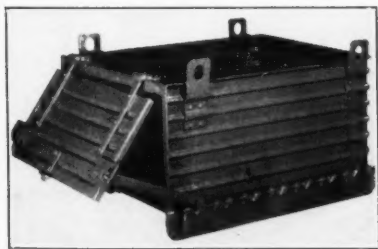
For more complete information concerning any of the products listed in these columns, write to Western Industry, 503 Market Street, San Francisco, and we shall see that the material is forwarded to you. Descriptions of the products and claims made are those of the manufacturer.

• **BLACKOUT AWNING**—A new practical answer to the blackout problem for industrial, commercial or residential buildings is seen in the introduction of "Meta-Fold" metal, blackout awnings. According to the manufacturer, these awnings are operated as simply as the old-time roll top desk. To conserve space when the awning is raised, it has been designed in segments of "galvannealed" steel which nest together in a telescopic manner. Each segment is sealed from the other by a light-proof, noise-absorbent gasket. The entire



awning is rust-proof and fireproof, and can be provided with an inside lock. Among other advantages claimed for this product are the elimination of telltale reflection from the moon and other outside light at night; permanence of the installation which requires no seasonal taking down and storing; full use of daytime light with no restriction of ventilation. — Acklin Stamping Co., Toledo Ohio.

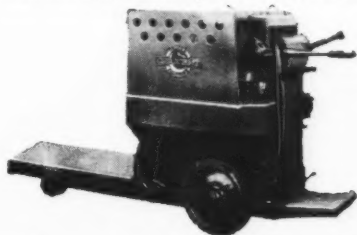
• **STEEL BOX**—A corrugated steel box and platform unit with hinged end door for efficiently handling small forgings, hot or cold, and other small metal parts, has been designed. The bottom of the box



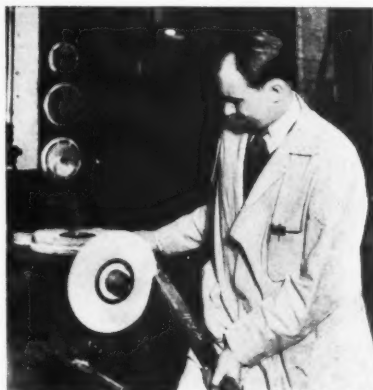
is smooth and of heavy gauge steel so that when placed on a rack and tilted approximately 20 degrees, parts will flow easily through the door opening onto a table or other place convenient for the worker.

The door is equipped with heavy duty forged hinges, reinforced and riveted in place. A slotted bar on one side of the door makes it easy to hold the door open as little or as much as is desired, and so control the flow of material from the box. — Truscon Steel Co., Youngstown, Ohio.

• **LIFT TRUCK**—For plants requiring lift-truck facilities, the type "LDLF" is claimed to be one of the most economical lift trucks on the market, both for first cost and operation. Designed for use with 7-inch hand-truck skids, three to five hand



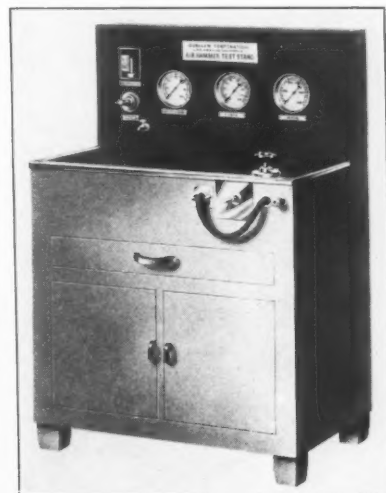
truckers can be replaced at an operating cost of one-third the daily wage of a laborer. The truck is operated by a running platform under skid; several pumps on foot pedal will raise skid a full three inches; load is lowered by means of release lever on dash which is controlled by a hydraulic check. Crescent Truck Co., Lebanon, Penn.



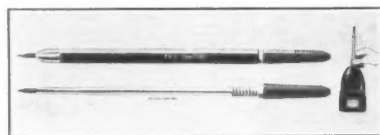
• **INDUSTRIAL BRUSH**—A new type of Tampico fiber industrial brush, treated by a secret process, has been announced. The new product is expected to speed war production in many industries requiring brushing equipment to remove burrs, polish or form metal parts or to finish welded seams. Announcement of the new product followed discovery of the fact that the material used in the treatment spaces the fibers to a definite relationship, one with the other, and eliminates the tendency of the fiber to group or "knife" at high speeds. Company engineers claim that the new treatment supports the individual strands of Tampico, thus preventing it from fluttering

and throwing off the compound. It resists heat and temperature changes more effectively. — The Osborn Mfg. Co., 5401 Hamilton Ave., Cleveland, Ohio.

• **AIR HAMMER TESTER**—To determine more quickly the operating efficiency of air driven hammers or to check the performance of such tools against predetermined standards, the Burklyn Air Hammer Test stand has been developed. Designed primarily for use by the tool maintenance shops of plants using air hammers, the Burklyn test stand shows the three basic factors of performance—air consumption, force exerted by hammer and the blows per minute. The stand measures 40 inches



in width, 24 inches in depth at the work table level and 58 inches in height. The average air pressure used in most factories is the only external connection to the test stand, and a regulator on the instrument panel is provided so that a uniform testing pressure can be maintained in order to give uniformly accurate test comparisons. The cabinet is provided with a drawer for tools and spare parts, and two larger compartments with doors for storage space of tools to be repaired. — Burklyn Corporation, 3427 Glendale Blvd., Los Angeles, Calif.



• **DRAFTING PENCIL**—A new mechanical drafting pencil with a motor-driven lead pointing machine, for engineers, architects and mechanical draftsmen has been introduced. This pencil has a full length lead tube of spring brass—an exclusive feature. The tube is driven downward into

the chuck point by a screw-operated mechanism providing a positive grip on the lead and preventing any slippage. It is claimed that the flexible "squeeze action" of the new mechanism does not mar or ring the leads, causing them to break. The barrel is made of lightweight Tenite, and is perfectly balanced. The metal tip, so objectionable, has been eliminated. Tec Pencil Co., 9381 Olympic Blvd., Beverly Hills, Calif.

• **SAFETY TRANSFORMER**—To eliminate accidental fires and explosions, a new Safety Transformer has been developed which provides two 32 volt A.C. extension lines giving light for workmen who must perform their duties under conditions in which explosive gases or vapors exist. This also applies to cases where inflammable materials are stored or in process, and where the possibility of a high voltage spark may cause considerable damage.

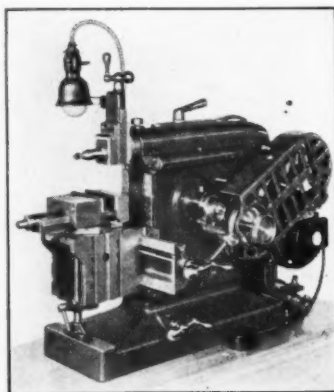


This unit also is particularly adapted for inspection work where workmen must come in contact with moist surfaces or conditions for the lower voltage prevents severe shock due to defective wires or wiring.—Acme Electric & Mfg. Co., Cuba, New York.

• **METAL CAPS**—Designed to protect plain end and beaded tubing from handling knocks and shocks and to seal out dirt, dust and moisture, a new line of inexpensive flexible metal caps has been introduced. A steel spring of hourglass design is incorporated in these new caps. When turned in a counter-clockwise direction, the spring expands to accommodate the tubing which it seizes firmly when released. Because these caps are faster to attach and can be re-used, the manufacturer claims they are far less costly than rubber and cellulose, and that being made of steel, cadmium-plated to U. S. Army specifications, there is no danger of particles chipping and entering the tubing.—Tubing Seal-Cap, Inc., 215 West Seventh St., Los Angeles, Calif.

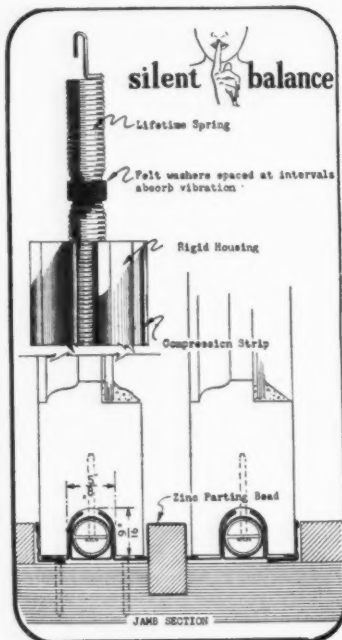
• **PRECISION SHAPER**—Available for stationary installation or mounted on a portable cabinet, the new AMMCO 7" Precision shaper's features include quick adjustments of stroke, feeds, ram position, tool head, speeds, table height and table support. The vise is made of semi-steel and

is mounted on the table with a single bolt and is held in position with a key. The vise base is provided with slots for three working positions of the table, and is graduated for any angle from 0 to 90 de-



grees on either side of the center. Counter-shaft has a fourstep V-pulley with separate adjustment for V-belt and motor belt. Pulleys and belt are enclosed behind hinge-type safety belt guard for quick change of belt.—Automotive Maintenance Machinery Co., 2100 Commonwealth Ave., North Chicago, Ill.

• **SILENT-BALANCE**—As shown in the drawing, silent-balance is a combination spring balance and weatherstrip unit which eliminates box frames, sash weights, pulleys and cord. It consists of a vibra-



tion absorbing spring (of proper length and tension for standard sash sizes) which reduces noise to a minimum, a metal housing and side compression members acting as weatherstrips.—Holland Weatherstrip Co., Holland, Mich.

General Electric Promotion

M. Rhine last month was appointed manager of the industrial department of the General Electric Pacific District, it was announced by R. M. Alvord, G-E commercial vice president. In his new capacity, Mr. Rhine will be responsible for G-E's industrial department activities on the west coast with the exception of Washington and Oregon.

Mr. Rhine was graduated from the University of California in 1904 with the



M. RHINE
General Electric Co.

degree of Bachelor of Science in electrical and mechanical engineering. In the fall of that year he joined General Electric at Schenectady as a student engineer, and in 1906 was transferred to San Francisco.

GROWING PAINS

(Continued from Page 30)

Last month, announcement was made that the Navy would construct a \$3,000,000 shipyard at Everett, Wash. It is reported that it will be owned by the government and operated by the Everett-Pacific Co., a subsidiary of the Pacific Car & Foundry Co., of Seattle.

From this shipyard project is expected to arise the usual housing problem, and no doubt the government will have to be called on to establish a local Defense Housing branch to provide the necessary appropriations to construct at least 2,000 new dwelling units for the ten to twelve thousand increase in population which should result. Naturally, this will mean that other facilities, such as schools, fire and police protection, will have to be met.

YOURS FOR THE ASKING

1053
• SARAN TUBING—Saran is a thermoplastic resin which can be melted and formed to any desired shape and re-melted as often as desired. The resin is manufactured from readily available materials by a process of co-polymerization. According to the manufacturer, Saran opens up some entirely new fields of use for plastics inasmuch as it is characterized by complete resistance to solvents and acids. Among other qualities that give Saran an immediate field of use is its extreme tensile strength, comparing with the strength of steel and other metals now almost unavailable. Complete technical data may be obtained from the Acadia Synthetic Products Division, Western Felt Works, 4115 Ogden Ave., Chicago, Ill.

1054
• INSTA-SPLINT—Development of a new splint dressing for leg and hip fracture was announced recently. Known as the Insta-Splint, the device is said to be so quickly set in position that any trained first aider may complete a dressing for a hip fracture in less than two minutes. It is completely self-contained, including all necessary accessories. One of the unique features of the Insta-Splint is its adjustability to the stature of the patient. A folder containing complete information is available. B. F. McDonald Co., 1248 So. Hope St., Los Angeles, Calif.

1055
• AIRPAINTING SHELLS—A new type of automatic unit for painting the exteriors of 20 millimetre shells now is being manufactured to speed the flow of ordnance to armed forces. Average production claimed is 1800 pieces per hour—painted and dried. In the operation of this machine, the shells are loaded manually and conveyed to the spraying station on removable holding and shielding fixtures. After shells receive the coat of lacquer, they are conveyed through an electrically heated, thermostatically controlled oven for a three-minute drying period. Bulletin F12-41 describes these units. Paasche Airbrush Co., 1909 Diversey Parkway, Chicago, Illinois.

1056
• DUST COLLECTORS—A 58-page spiral-bound catalog, No. 72, describing "Dustube" dust collectors has been published. Prepared as a handy manual to serve plant engineers and officials in the selection of proper control equipment for specific dust problems, it provides full information and photographs of the models available with operating data, construction features and basic specifications. Included is a complete engineering manual section which gives practical essential data for

efficient operation of a dust control system, technical layouts and engineering tables and charts especially useful in planning applications of dust control units. American Foundry Equipment Co., 555 So. Byrkit St., Mishawaka, Ind.

1057
• METAL CLEANING—A 50-page illustrated handbook, "Metal Cleaning in War Time," has been made available. This handbook discusses in detail the metal cleaning problems in the production of shells, shell cases, fuses, other munitions and parts involved in the production of material and equipment vitally important to the War Program. In addition, outstanding cleaning operations required in the production of ordnance, small arms, material, transport equipment and other metal items which must be built to meet the complex and extensive demands of the war are discussed. The handbook contains many flow charts, illustrations and diagrams of washing machines used in the manufacture of munitions. Magnus Chemical Co., Inc., Garwood, New Jersey.

1058
• FLOOR COVERING—Advantages to be gained in industrial plants by the use of rugged, low-cost floor coverings as contrasted with ordinary cement floor are outlined in a four-page illustrated booklet which has been made available. This product may be had without priorities restrictions and, according to the manufacturer, deadens noise, insulates and cuts maintenance costs and closely resembles linoleum. The Paraffine Companies, Inc., 474 Brannan St., San Francisco, Calif.

1059
• SIGNALLING CONTROLLER—"Simplified Signalling Controller for Automatic Testing of Condensate Purity" was issued recently. This catalog describes the equipment industrial steam plants can use for dependable protection against damage caused by contaminated condensate. Used where indicating and recording of condensate purity are not needed, this simple, automatic equipment tests condensate purity continuously. Its self-contained signal lights show whether condensate is above a specified minimum purity and is safe to use again, or whether it is below the limit and should be diverted to waste. Catalog N-95-163(1). Leeds & Northrup Co., 4934 Stenton Ave., Philadelphia, Penn.

If any of this material interests you, please write to WESTERN INDUSTRY, 503 Market Street, San Francisco. We will see that full information reaches you.

1060
• PAPER PRODUCTS—In addition to making familiar tags and labels, the Dennison Manufacturing Co. now has facilities for working paper in an infinite variety of ways. A folder has been made available in which are described but a few of the basic paper-working operations in terms of the various paper gadgets already made for war contracts. According to the manufacturer, such operations can be combined to make an almost endless number of different paper products. Dennison Manufacturing Co., Framingham, Mass.

1061
• PUMP DATA—Answers to many everyday questions about pumps, piping applications, viscosity of liquids, pipe friction, etc., are contained in Bulletin 302, recently issued. The new bulletin has comprehensive tables of friction losses in pipes, covering viscosities to 2400 S.S.U., valves and fittings, viscosity conversion tables, tables of practical suction lifts, viscosity of various liquids at different temperatures and much other data frequently required by those who install pumps and make piping layouts. The manufacturer claims the unique value of this bulletin lies in the fact that it brings together in very accessible form a number of tables and liquid classifications which seldom, if ever, have been published in one piece of literature. Engineering Dept., Blackmer Pump Co., Grand Rapids, Mich.

1062
• SOCKET SCREWS—Safety Service is the foreword in this spiral-bound, 32-page catalog. All products are indexed, described and illustrated. Also included are informative tables. Safety Socket Screw Corp., 4440 No. Knox Avenue, Chicago, Illinois.

1063
• POWER PLANTS—A complete line of Diesel electric plants for both alternating and direct current was announced recently. These plants are designed around four different sizes of International Harvester engines operating at engine speeds of either 900 or 1200 r.p.m. Ready-Power generators are capable of producing all of the electrical power the engine can develop. They provide full engine capacity and are able to start motor loads that would "kill" the generator voltage on plants of lesser ability, according to the manufacturer. A six-page Bulletin No. 523 illustrating and describing these new power plants has been made available. The Ready-Power Co., 3826 Grand River Avenue, Detroit, Michigan. Also available is Bulletin 522B, illustrating and describing mobile generating plants.

THE LAST WORD

By the Editors

HIGHLIGHTS

Of the report of the Light Metals & Aircraft sub-committee of the Truman senatorial investigating committee after visiting west coast aircraft plants:—the large aircraft units are primarily assembly plants doing only a very small part of their own manufacturing; they depend on anywhere from 1,000 to 4,000 suppliers of parts and sub-assemblies to keep main assembly lines going. When the big expansion of aircraft plants was undertaken more than a year ago, no attention was paid to expanding at the same time the facilities of thousands of sub-contractors. Lack of parts still slows down assembly lines.



Fences Need Building

Congress is flooded with letters complaining about the lack of something—all things—the conduct of the war. People are mad but with the complexity of the Washington situation and the many confusing news items which come from the nation's Capital, they don't know where to hit. The past Congressional Easter vacation found the majority of congressmen from the West back at their homes for a brief visit to see first hand what was going on in their home towns.

Shooting Season Opens

Involved in the general elections to be held next November are 32 seats in the Senate, 34 governorships and the entire House of Representatives consisting of 435 members. Here on the Pacific coast, the shooting season opens May 15 when the primaries will be held in Oregon with the governor, four representatives and a senator involved. California primaries will follow August 25 with a governor and 23 representatives involved and later in Washington, on September 8, six representatives will be selected to run for each party.

COVER PICTURE

Ships, and more ships. Massed workers at the California Shipbuilding Corp. plant at Los Angeles harbor which is turning out Liberty ships with regularity. Indicative of newer methods of fabricating, the assembled prow of a ship is seen up-ended at the right; shipways are in the background. This company employs 26,000. Seven major ship plants in the Los Angeles harbor district employ 52,570 compared with 18,000 a year ago.—Photo U.S. Maritime Commission.

Explanation

"Oniomania,—a psycho-neurotic symbolism evidenced by an abnormal urge to spend money."—The definition is that of *Taber's Digest of Medical Terms*. And it has been there in the medical dictionary for years. This may serve to throw some light on Washington activities over the past few years.

Economy

War Production Board releases to the press are now utilizing both sides of the paper to carry the many thousands of words which come out of Washington daily. No doubt this will save paper but will present difficulties for some paste pot editors who now will have to retype the material on the reverse side. To overcome this annoyance, why not send two copies of the releases to each editor!

WESTERNERS AT WORK

Continued from page 28

Henry B. Owen, well known Pacific Northwest retail executive, has been appointed field manager for the Office of Price Administration unit recently opened in Seattle. For the past six years he has been vice president and store manager for the Bon Marche in Seattle, previously having been vice president of Frederick & Nelson, retailers. The newly opened office will be composed of four divisions com-

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prising investigation, price, consumer and legal. The office will be staffed with experts and specialists to assist the Northwest in meeting price and rationing problems.

From San Jose last month came word that **Ralph E. Knight** had been appointed chief of engineering and construction for **Permanente Corp.** with its nearby plant. **D. A. Rhodes** was named chief of plant production and operations of the magnesium plant which is doing 100 per cent war work. Rhodes succeeds the late **Harry P. Davis** who was recently killed in an automobile accident.

Emil G. Sick of Seattle Brewing & Malting Co., Seattle, and **Karl F. Schuster** of the Acme Breweries of San Francisco have been appointed members of the recently formed **WPB Brewing Industry Committee**.

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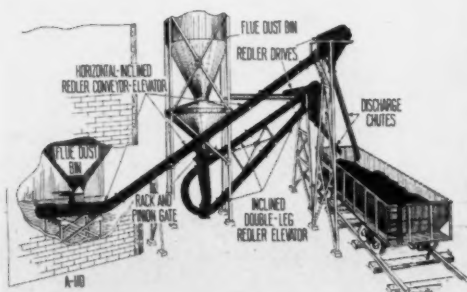
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